

DEPARTMENT OF DESIGN AND CONSTRUCTION  
**CITY AND COUNTY OF HONOLULU**

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JAN 23 2011  
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COLLINS D. LAM, P.E.  
ACTING DIRECTOR

DEPUTY DIRECTOR

CDD-A 10-396477

December 28, 2010

Mr. Herman Tuiolosega  
Acting Administrator  
Office of Environmental Quality Control  
State of Hawaii  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

Dear Mr. Tuiolosega:

Subject: Draft Environmental Assessment  
Carlos Long Street Drainage Improvements  
Honolulu, Oahu, Hawaii

The City and County of Honolulu, Department of Design and Construction, has reviewed the Draft Environmental Assessment for the subject project and anticipates a Finding of No Significant Impact. Please publish notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, one (1) copy of the document in PDF format on CD, and one (1) hard copy of the Draft EA.

Please contact Edward Visaya at 768-8807 if you have any questions.

Very truly yours,

Handwritten signature of Collins D. Lam in cursive.

Collins D. Lam, P.E.  
Acting Director

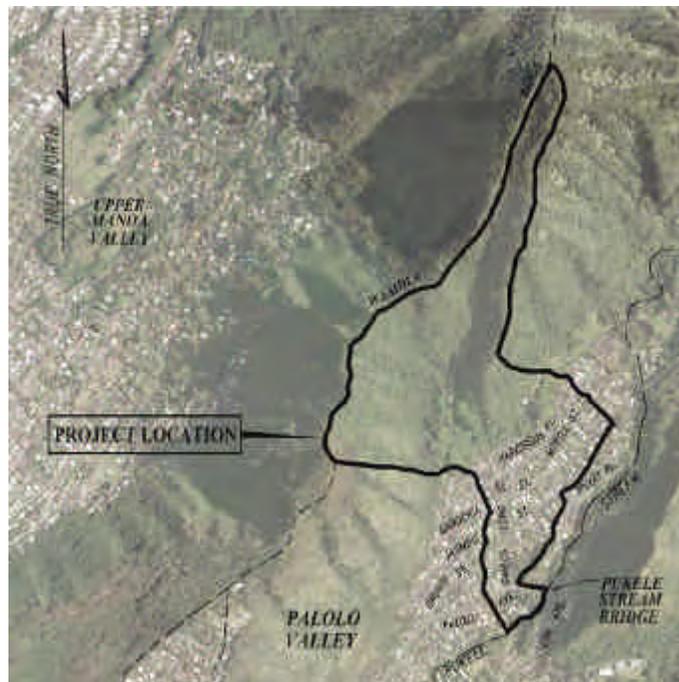
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Enclosures

**DRAFT**

**ENVIRONMENTAL ASSESSMENT  
FOR  
CARLOS LONG STREET DRAINAGE IMPROVEMENTS  
HONOLULU, OAHU, HAWAII**

**TAX MAP KEY: 3-4-04:01, 3-4-05:01, 04, 64 & 65  
3-4-11:96, 97, 108, 109, 121, 122 & 124  
3-4-12:12, 23, 24 & 35  
3-4-20:03; 3-4-24:42 to 48, 67 & 68  
3-4-25:09, 10, 35, 36, 65 to 68**



This document is prepared pursuant to Chapter 343, HRS

**PROPOSING AGENCY:**  
Department of Design & Construction  
City & County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813

**PREPARED BY:**  
Shimabukuro, Endo & Yoshizaki, Inc.  
SEY Engineers  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715



**December 2010**

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## CHAPTER 1 INTRODUCTION

### 1.1 GENERAL INFORMATION

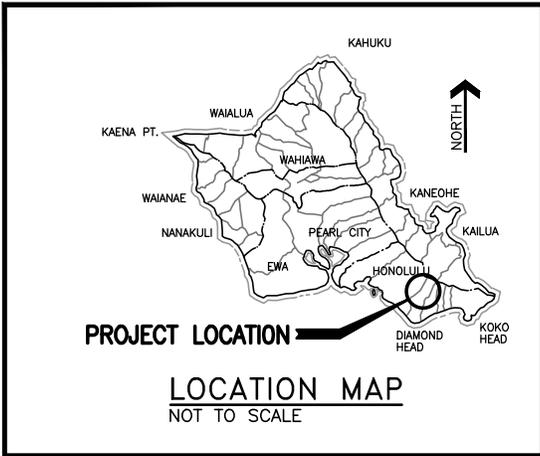
The City and County of Honolulu Department of Design and Construction (DDC) has proposed the construction of the Carlos Long Street Drainage Improvements project. The project is located in upper Palolo Valley on the eastern side of the Island of Oahu in Honolulu, Hawaii as shown on **Figure 1-1**. Carlos Long Street is about 1-3/4 miles north-northeast of the intersection of Waiialae Avenue and Palolo Avenue and is accessible from Palolo Avenue or 10<sup>th</sup> Avenue.

The study area extends about 6,000 feet from the main discharge point at Pukele Stream south of the Pukele Stream Bridge at the south end to the top of Waahila Ridge at the north end. The study area extends about 3,000 feet from the west end at the top of Waahila Ridge to the east edge of Carlos Long Subdivision and Pukele Stream at the east end.

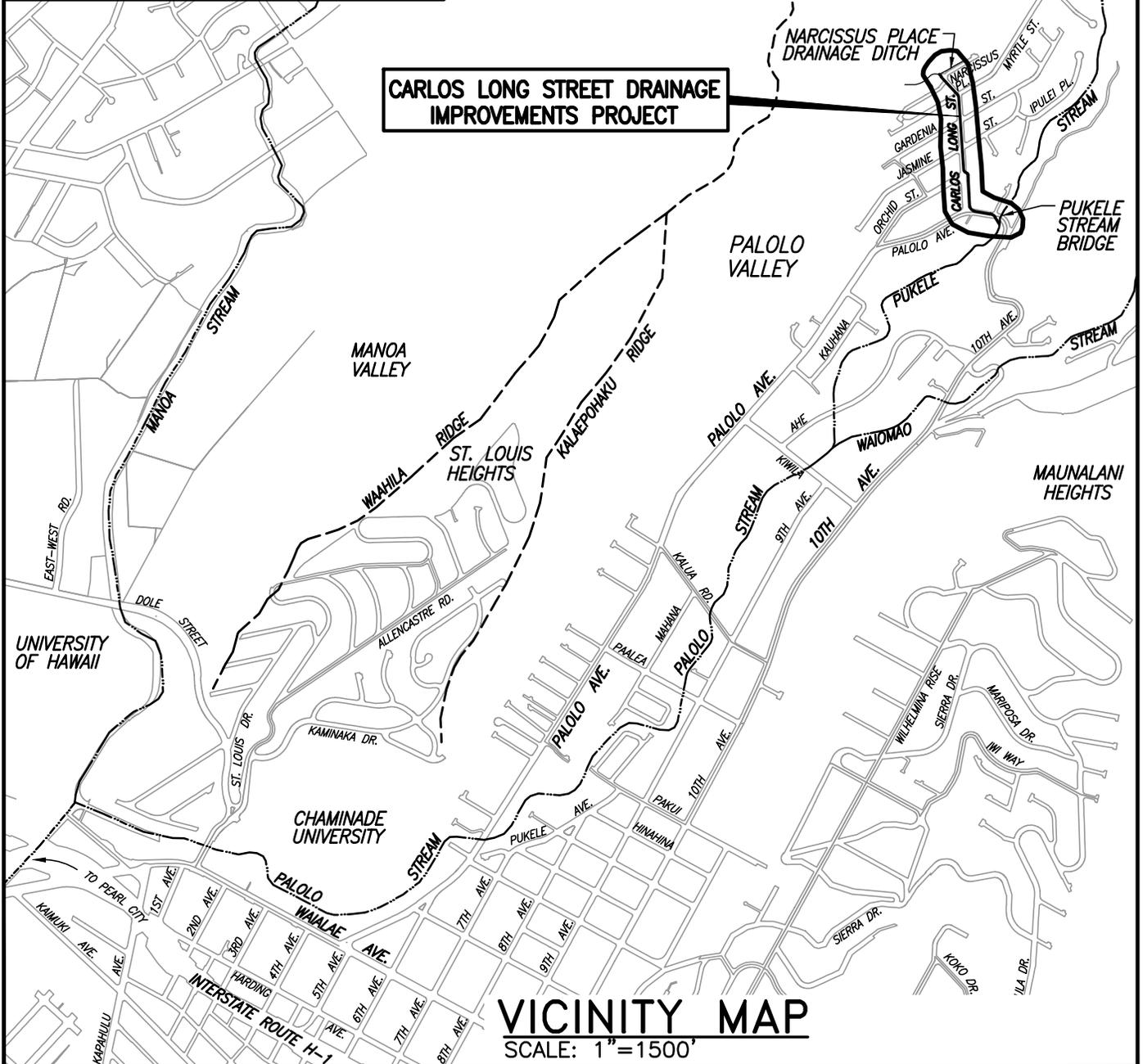
*Engineering Report for the Carlos Long Street Storm Drain System, September 2002*, prepared by Marc M. Siah & Associates, Inc. (*Siah Report*) summarized that based upon the hydrological and hydraulic analyses according to the *City's Rules Relating to Storm Drainage Standards*, the existing Carlos Long Street storm drain system including all branches is extremely inadequate for handling a 10-year storm event. See **Figure 1-2**. Due to high flow velocities and steep slopes within the area, a 10-year storm event would cause overflow conditions at each manhole, catch basin and grated inlet throughout the system.

An option proposed in the *Siah Report* and acceptable to the City was a separate box drain system along Carlos Long Street to convey storm runoff from the hillside areas upstream of Narcissus Place drain intake structure. This option would utilize the clear space between existing utilities running parallel to Carlos Long Street varying from a minimum of eight feet near Narcissus Place to Myrtle Street to as much as 18 feet from Myrtle Street to Palolo Avenue. This separate box drain system would not service the Carlos Long Subdivision and would have a constant cross section from the Narcissus Place intake structure to the Pukele Stream outlet with no existing Subdivision drain connections.

A field investigation was conducted by DDC staff, which revealed that the substandard and inadequate existing drain system south of Palolo Avenue is located across private residential properties and under houses without easements. In this built-up area, a new box drain system will be costly to construct and difficult to maintain. As a result of this finding, DDC retained Shimabukuro, Endo & Yoshizaki, Inc. (SEY) to conduct a study and establish the new route for the separate hillside box drain option along Carlos Long Street to convey the hillside 10-year storm flow from the existing hillside intake structure upstream of Narcissus Place to Pukele Stream.



TRUE NORTH  
SCALE: 1" = 1500'



**VICINITY MAP**  
SCALE: 1" = 1500'

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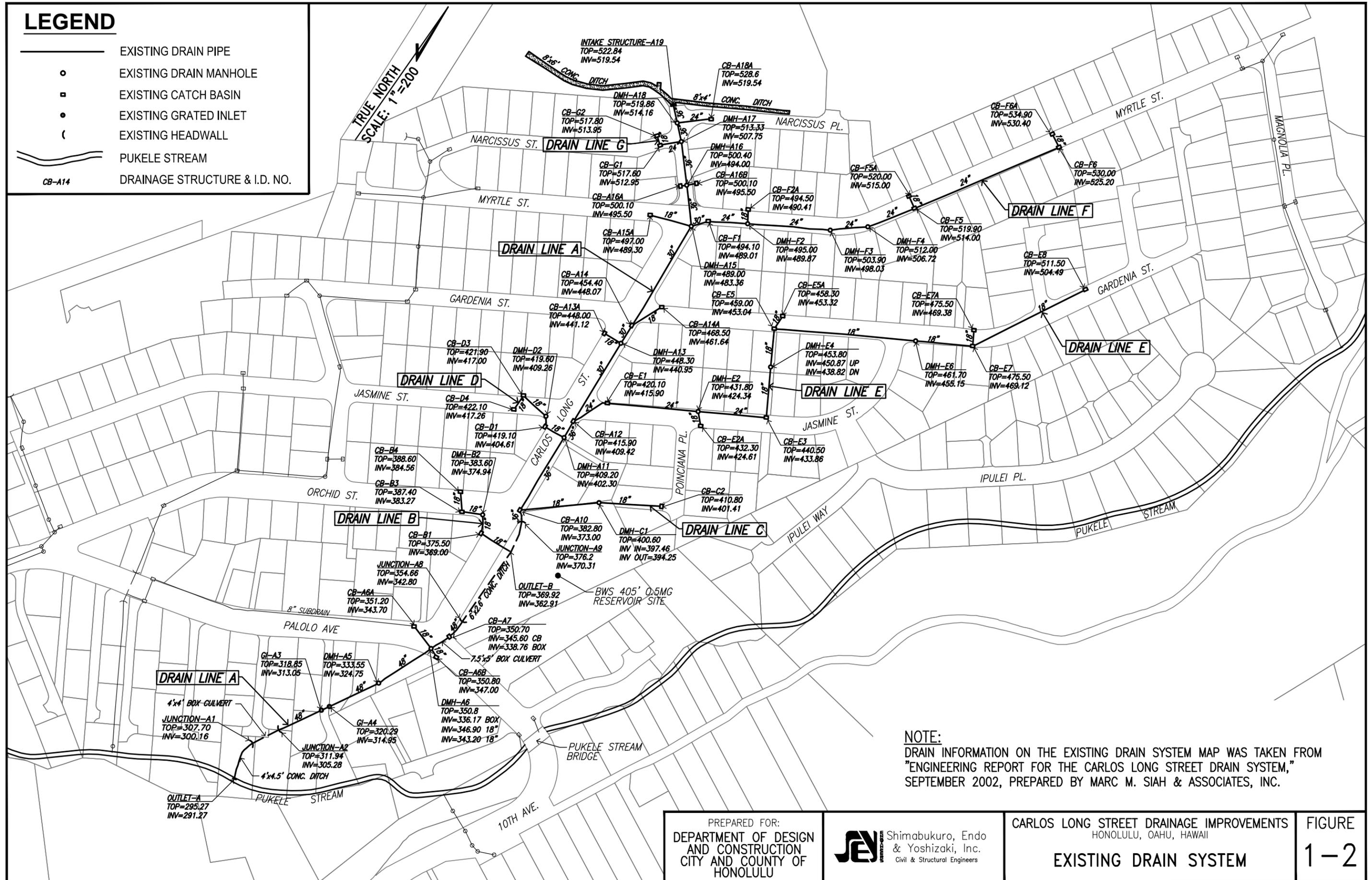
**JEN** Shimabukuro, Endo  
& Yoshizaki, Inc.  
Civil & Structural Engineers

CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
HONOLULU, OAHU, HAWAII  
**LOCATION & VICINITY MAPS**

**FIGURE**  
**1-1**

# LEGEND

-  EXISTING DRAIN PIPE
-  EXISTING DRAIN MANHOLE
-  EXISTING CATCH BASIN
-  EXISTING GRATED INLET
-  EXISTING HEADWALL
-  PUKELE STREAM
-  DRAINAGE STRUCTURE & I.D. NO.



**NOTE:**  
 DRAIN INFORMATION ON THE EXISTING DRAIN SYSTEM MAP WAS TAKEN FROM "ENGINEERING REPORT FOR THE CARLOS LONG STREET DRAIN SYSTEM," SEPTEMBER 2002, PREPARED BY MARC M. SIAH & ASSOCIATES, INC.

PREPARED FOR: DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU	 Shimabukuro, Endo & Yoshizaki, Inc. Civil & Structural Engineers	CARLOS LONG STREET DRAINAGE IMPROVEMENTS HONOLULU, OAHU, HAWAII <b>EXISTING DRAIN SYSTEM</b>	<b>FIGURE</b> <b>1-2</b>
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The lower end of the new hillside separate box drain was to be located in the Palolo Avenue road right-of-way and terminate at a new outlet to Pukele Stream. The study also analyzed routing the separate Carlos Long Subdivision 10-year storm flow within the existing drain system along Carlos Long Street and across the built-up area south of Palolo Avenue to the existing Pukele Stream outlet.

The results of the SEY study were discussed in *Engineering Report for the Carlos Long Street Drainage Improvements, October 2009*, prepared by SEY (*SEY Report*). The Separate Box Drain System proposed in the *SEY Report* for the drainage improvements is discussed in **Subsection 2.4 Separate Box Drain System** of this Draft Environmental Assessment (DEA) and consists of the Hillside Drain System and the Subdivision Drain System. See **Figures 2-4** and **2-5**. The drainage improvements will minimize periodic flooding and slowdown of vehicular and pedestrian traffic along Carlos Long Street and Palolo Avenue caused by an inadequate existing drainage system.

## **1.2 PURPOSE FOR ENVIRONMENTAL ASSESSMENT**

This DEA has been prepared to address the probable impacts on the surrounding environment resulting from the proposed action of constructing drainage improvements for the project. Based on information gathered for the cultural and historic background and community consultation, the proposed action should have no significant impact on historical, archaeological or cultural resources at the project site. However, potential impacts of the proposed action may occur beyond the project site on native Hawaiian or other ethnic groups' cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes, and on cultural, historic, and natural resources. Environmental concerns, potential environmental impacts, and proposed mitigation measures related to the proposed action were addressed in accordance with Chapter 343, Environmental Impact Statements, HRS, and Title 11, Chapter 200, Department of Health Hawaii Administrative Rules. Copies of the DEA will be available at the Kaimuki Public Library for review by the public.

The construction is scheduled to begin in the Spring of 2012 and is estimated to continue for 1 year.

After review of the Draft EA is completed by various government agencies, other interested organizations and individuals, and following a formal 30-day comment period, the proposing and approving agency, the DDC will prepare a Final EA. The DDC is anticipated to conclude that the project will have no significant impact on the environment and will determine a **Finding of No Significant Impact**.

### 1.3 SUMMARY OF EA INFORMATION

Project Name: Carlos Long Street Drainage Improvements

Applicant: Department of Design & Construction  
City & County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813  
Contact: Mr. Edward Visaya, Project Manager

Agency's Consultant: Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816  
Contact: Howard K. Endo, Ph.D., P.E.

Approving Agency: Department of Design and Construction, City & County of Honolulu

Project Description: Construct about 2,008 lineal feet of drain lines and associated appurtenances to adequately convey a 10-year storm event.

Project Location: Palolo Valley in East Honolulu on the island of Oahu along Carlos Long Street and Palolo Avenue

Existing Use: The City owns and maintains the Carlos Long Street and Palolo Avenue for vehicular and pedestrian traffic. The BWS owns, operates, and maintains the Palolo 405' 0.5 MG. Reservoir Site.

Land Ownership: City and County of Honolulu, Board of Water Supply and various adjacent property owners

Tax Map Keys: 3-4-04:01  
3-4-5:01, 04, 64 & 65  
3-4-11:96, 97, 108, 109, 121, 122 & 124  
3-4-12:12, 23, 24 & 35  
3-4-20:03  
3-4-24:42 to 48, 67 & 68  
3-4-25:09, 10, 35, 36, 65 to 68

Required Easements: Drainage:  
TMK: 3-4-04:01 Dept. of Land & Natural Resources  
TMK: 3-4-05:64 Benjamin & Remedios Carlos  
TMK: 3-4-05:65 Various Owners of Driveway  
TMK: 3-4-24:44 Board of Water Supply

Temporary Construction:

TMK: 3-4-25:35 Craig & Cheryl Laroya

TMK: 3-4-25:67 Marian Nishihara

TMK: 3-4-25:68 Janis Okubo

State Land Use: Urban

City Primary Urban Center  
Development Plan Use: Lower-Density Residential

City Zoning District: R-5 Residential

Special Designation Districts: None

Estimated Construction Cost: \$4,300,000 to be funded by the City

Anticipated Determination: Finding of No Significant Impact

Parties Consulted: See Chapter 6 Agencies and Public Consultation

Permits/Approvals Required: See Subsection 2.6 Permits/Approvals/Easements  
Required

## CHAPTER 2 PROJECT DESCRIPTION

### 2.1 PROJECT LOCATION AND VICINITY

The Carlos Long Street Drainage Improvements project is located in upper Palolo Valley on the eastern side of the Island of Oahu in Honolulu, Hawaii as shown on **Figure 1-1**. The project site is on the eastern slopes of Waahila Ridge in a firmly established suburban residential community of the Carlos Long Subdivision. Carlos Long Street is about 1-3/4 miles north-northeast of the intersection of Waialae Avenue and Palolo Avenue and is accessible from Palolo Avenue or 10<sup>th</sup> Avenue.

The study area extends about 6,000 feet from the main discharge point at Pukele Stream south of the Pukele Stream Bridge at the south end to the top of Waahila Ridge at the north end. The study area extends about 3,000 feet from the west end at the top of Waahila Ridge to the east edge of Carlos Long Subdivision and Pukele Stream.

### 2.2 EXISTING SITE CONDITIONS

#### 2.2.1 TRIBUTARY DRAINAGE AREAS

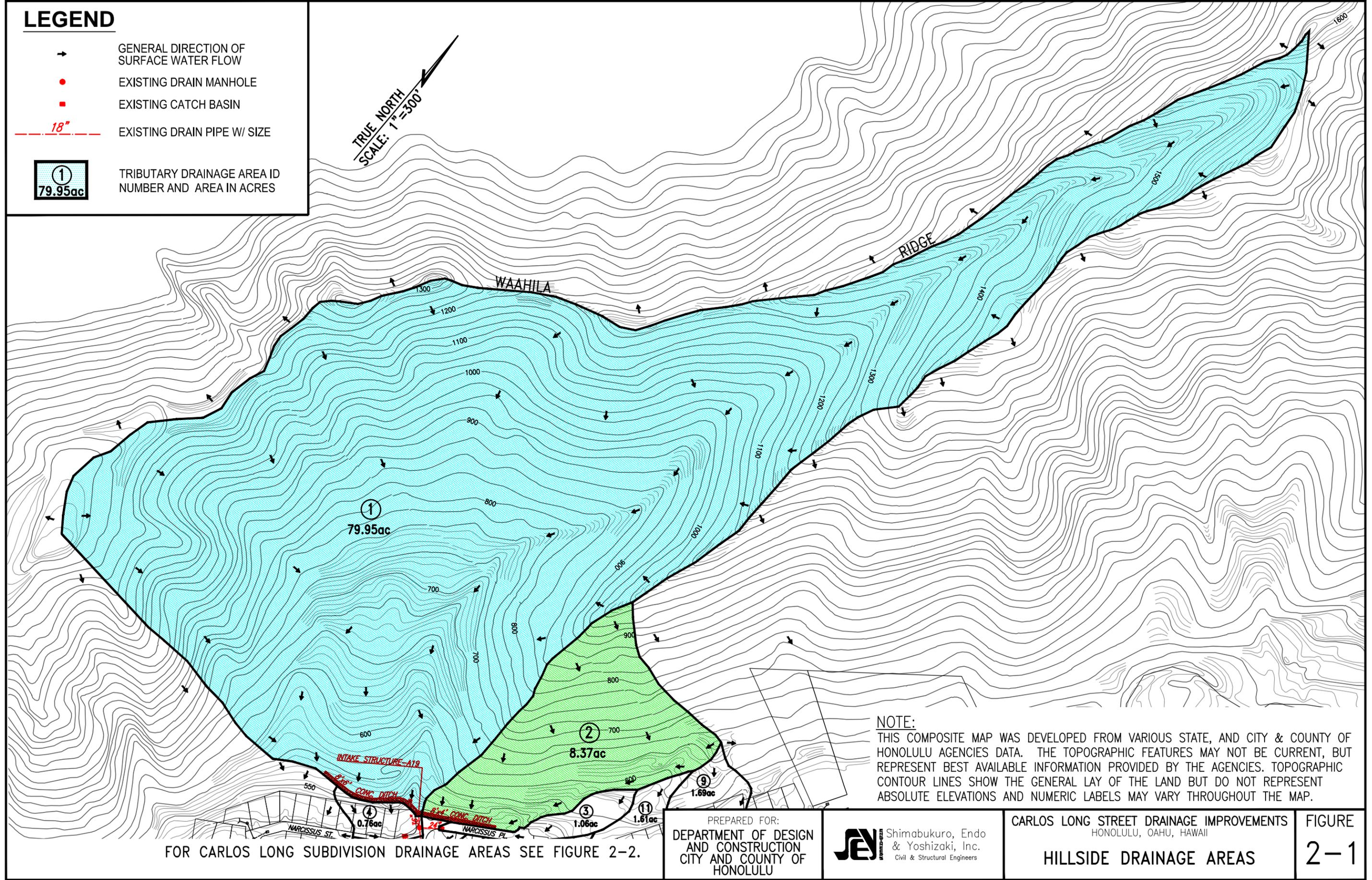
**Figure 2-1** shows tributary drainage areas that contribute storm runoff from the hillside above Narcissus Place and **Figure 2-2** shows the tributary drainage areas that contribute storm runoff from the Carlos Long Subdivision to the spine drain line of the Carlos Long Street drain system with outlet at Pukele Stream. The composite watershed encompassing all of the drainage areas was referred to as the Carlos Long Watershed in the *SEY Report*. These drainage areas were predicted from available topographic maps and as-built drawings, conducting field inspections of the drainage areas, and reviewing previous drainage reports.

The Hillside portion of the Watershed encompasses about 88.3 acres and receives contributory flows from the State of Hawaii (State) and City and County of Honolulu (City) properties. The Subdivision portion of the Watershed encompasses about 36.0 acres and receives contributory flows from residential properties. The combined Carlos Long Watershed extends approximately 6,000' from the top of Waahila Ridge on the north to its existing discharge point at Pukele Stream on the south. The Watershed extends laterally approximately 3,000' from Waahila Ridge on the west to the east edge of Carlos Long Subdivision and Pukele Stream on the east.

# LEGEND

- GENERAL DIRECTION OF SURFACE WATER FLOW
- EXISTING DRAIN MANHOLE
- EXISTING CATCH BASIN
- 18" --- EXISTING DRAIN PIPE W/ SIZE
- ①  
79.95ac TRIBUTARY DRAINAGE AREA ID NUMBER AND AREA IN ACRES

TRUE NORTH  
SCALE: 1" = 300'



FOR CARLOS LONG SUBDIVISION DRAINAGE AREAS SEE FIGURE 2-2.

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& Yoshizaki, Inc.  
Civil & Structural Engineers

CARLOS LONG STREET DRAINAGE IMPROVEMENTS  
HONOLULU, OAHU, HAWAII

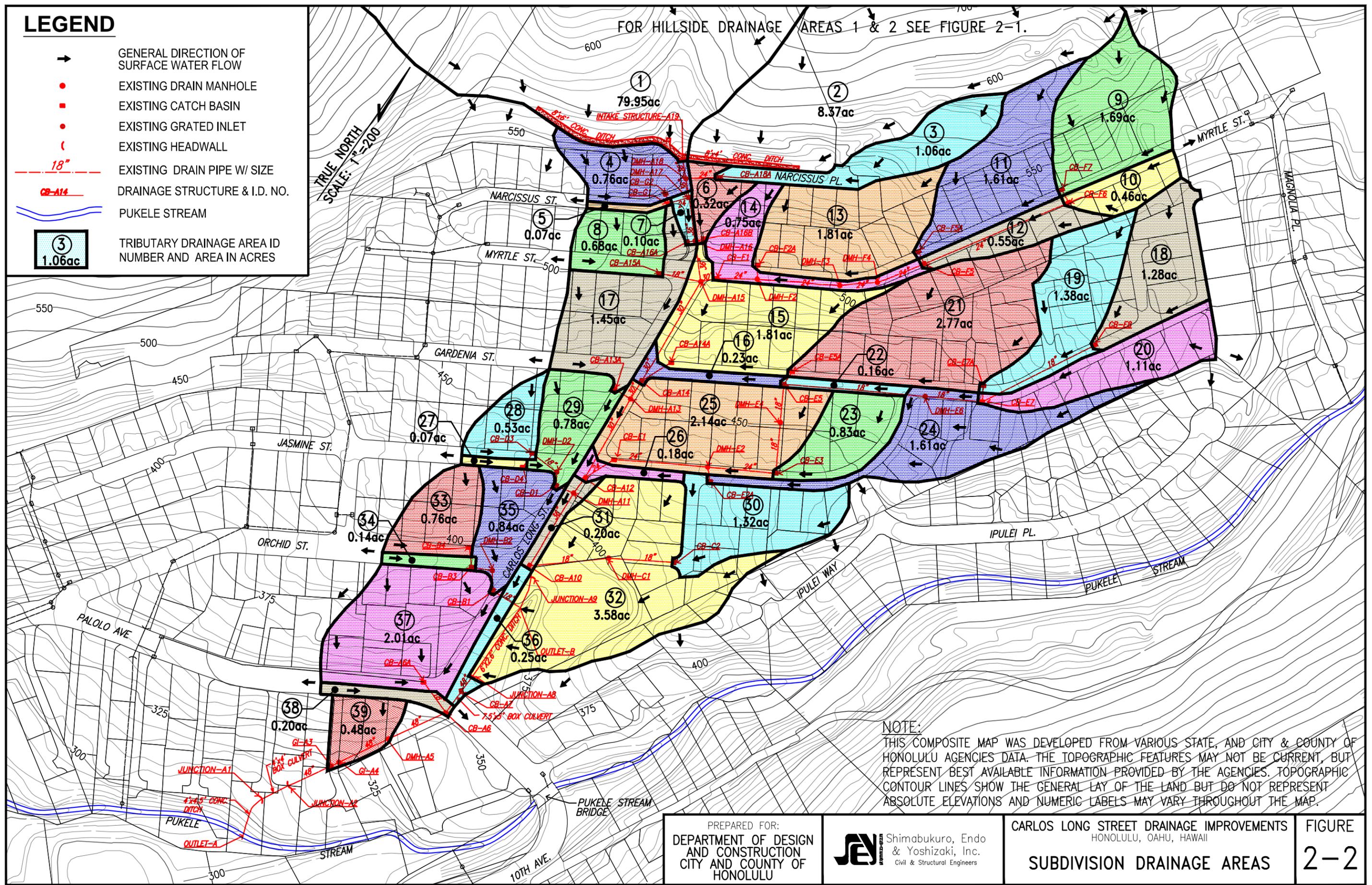
HILLSIDE DRAINAGE AREAS

FIGURE  
2-1

# LEGEND

- GENERAL DIRECTION OF SURFACE WATER FLOW
- EXISTING DRAIN MANHOLE
- EXISTING CATCH BASIN
- EXISTING GRATED INLET
- ( ) EXISTING HEADWALL
- 18" EXISTING DRAIN PIPE W/ SIZE
- CB-A14 DRAINAGE STRUCTURE & I.D. NO.
- PUKELE STREAM
- 3**  
1.06ac TRIBUTARY DRAINAGE AREA ID NUMBER AND AREA IN ACRES

FOR HILLSIDE DRAINAGE AREAS 1 & 2 SEE FIGURE 2-1.



NOTE:  
THIS COMPOSITE MAP WAS DEVELOPED FROM VARIOUS STATE, AND CITY & COUNTY OF HONOLULU AGENCIES DATA. THE TOPOGRAPHIC FEATURES MAY NOT BE CURRENT, BUT REPRESENT BEST AVAILABLE INFORMATION PROVIDED BY THE AGENCIES. TOPOGRAPHIC CONTOUR LINES SHOW THE GENERAL LAY OF THE LAND BUT DO NOT REPRESENT ABSOLUTE ELEVATIONS AND NUMERIC LABELS MAY VARY THROUGHOUT THE MAP.

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Civil & Structural Engineers

CARLOS LONG STREET DRAINAGE IMPROVEMENTS  
HONOLULU, OAHU, HAWAII

SUBDIVISION DRAINAGE AREAS

FIGURE  
2-2

## 2.2.2 TOPOGRAPHY

The drainage area topography of the Carlos Long Watershed generally slopes downward from north to south (Waahila Ridge to discharge points at Pukele Stream). See **Figures 2-1** and **2-2**. The upper two-thirds Hillside portion of the Watershed consists of preservation lands and is like a trough running down the western slopes of upper Palolo Valley from Waahila Ridge to the concrete diversion ditches above Narcissus Place. Storm runoff created in the trough area generally sheet flows downslope to the existing concrete ditches and flows to the intake structure at the upper end of Carlos Long Street above Narcissus Place.

The lower one-third Subdivision portion of the Watershed consists of urbanized residential lands that generate storm runoff from the Carlos Long Subdivision. The Carlos Long Street drain system is located in this area along the western slopes of upper Palolo Valley between elevations of 296 and 523 feet mean sea level. The ground along the system slopes steeply downward in the southerly direction with an average slope of 5 to 20 percent. Storm runoff created in the Subdivision areas generally sheet flows to existing catch basins along the connecting cross streets and is conveyed by drain lines to the spine drain line on Carlos Long Street to Pukele Stream. The general topography in and around the area slopes downward southerly towards the Pukele Stream.

## 2.2.3 EXISTING DRAIN SYSTEM

The existing Carlos Long Street drain system is shown on **Figure 1-2**. The drain system information was taken from the *Siah Report*. The spine of the system is designated as Drain Line A and consists of approximately 2,020 lineal feet of existing drain lines of various sizes and shapes. Drain Line A begins at Outlet-A at Pukele Stream, proceeds upstream and northward with a ditch, box culverts, and pipes crossing various private properties and Palolo Avenue, and connects to the south end of an existing 6' wide by 2.6' high concrete ditch crossing the BWS 405' 0.5 MG Reservoir site at Junctions-A8. From the north end of the concrete ditch at Junction-A9, Drain Line A crosses over into the Carlos Long Street right-of-way and proceeds upstream and northward crossing Orchid, Jasmine, Gardenia, Myrtle and Narcissus Streets and ends at the hillside Intake Structure-A19 above Narcissus Place. Drain Line A collects and conveys storm flows from the hillside concrete ditches above Narcissus Place and from connecting cross street drain lines of the Carlos Long Subdivision to the outlet at Pukele Stream.

Drain Line B begins at Outlet-B on Drain Line A at the concrete ditch in the BWS site and proceeds upstream and westward with approximately 216 lineal feet of 18" pipe to CB-B1, DMH-B2, CB-B3, and CB-B4. Drain Line B collects and conveys storm flows from a portion of Orchid Street to Drain Line A.

Drain Line C begins at CB-A10 of Drain Line A and proceeds upstream and eastward with approximately 324 lineal feet of 18" pipe to DMH -C1 and CB-C2.

Drain Line C connects and conveys storm flows from Poinciana Place to Drain Line A.

Drain Line D begins at DMH-A11 of Drain Line A and proceeds upstream and eastward with approximately 182 lineal feet of 18" pipe to CB-D1, DMH-D2, CB-D3 and CB-B4. Drain Line D collects and conveys storm flows from a portion of west Jasmine Street to Drain Line A.

Drain Line E begins at CB-A12 of Drain Line A and proceeds upstream and eastward with approximately 453 lineal feet of 24" pipe to CB-E1, DMH-E2 and CB-E3 and with approximately 947 lineal feet of 18" pipe to DMH-E4, CB-E5, DMH-E6, CB-E7 and CB-E8. Drain Line E collects and conveys storm flows from portions of east Jasmine Street and east Gardenia Street to Drain Line A.

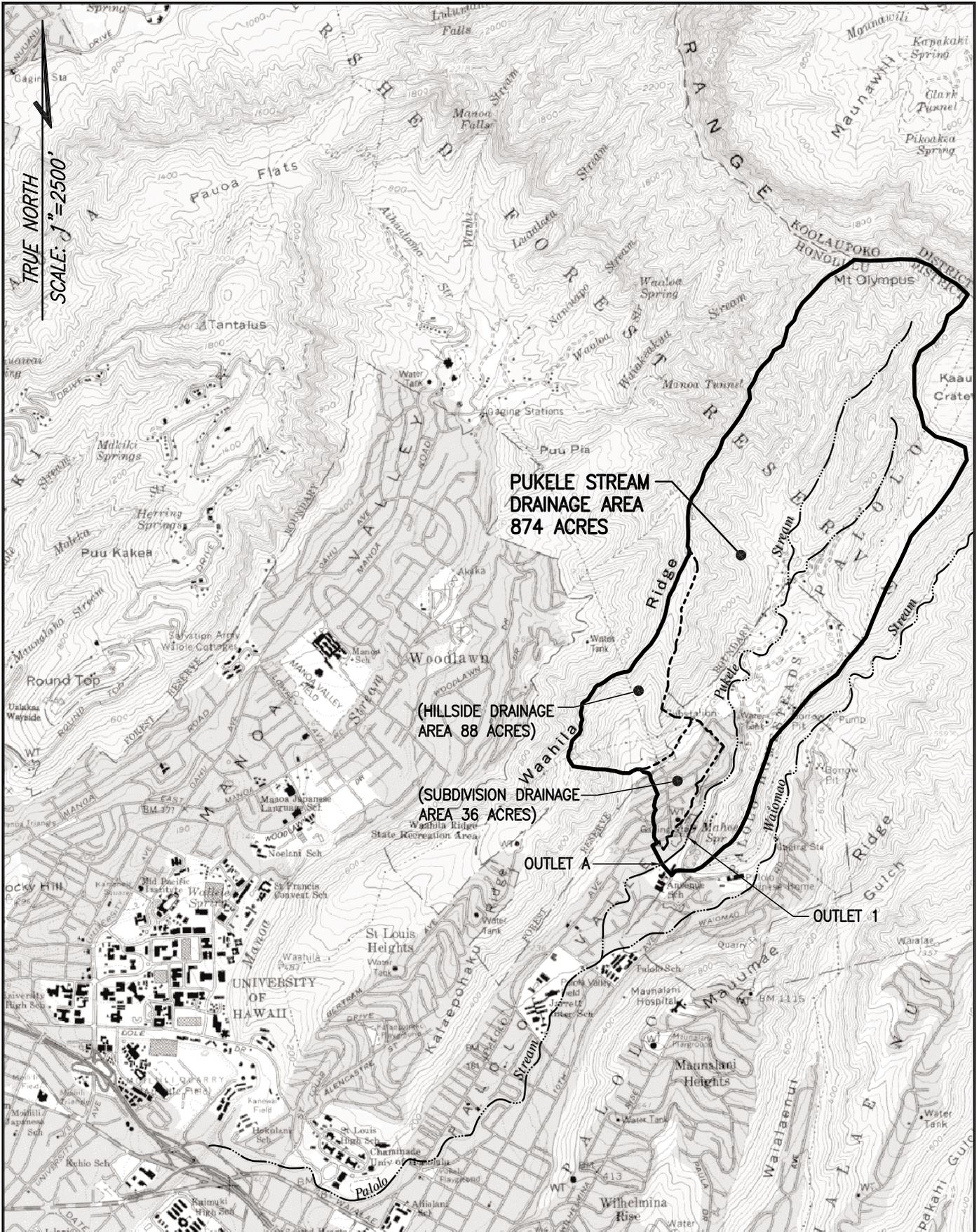
Drain Line F begins at DMH-A15 of Drain Line A and proceeds upstream and eastward with approximately 32 lineal feet of 30" pipe to CB-F1 and with approximately 838 lineal feet of 24" pipe to DMH-F2, DMH-F3, DMH-F4, CB-F5 and CB-F6. Drain Line F collects and conveys storm flows from portion of east Myrtle Street to Drain Line A.

Drain Line G begins at DMH-A17 of Drain Line A and proceeds upstream and westward with approximately 49 lineal feet of 24" pipe to CB-G1 and with approximately 23 lineal feet of 18" pipe to CB-G2. Drain Line G collects and conveys storm flow from portion of Narcissus Street to Drain Line A.

Approximately 540 lineal feet of 18" pipe and 74 lineal feet of 24" pipe from miscellaneous branch catch basins located along Carlos Long, Jasmine, Gardenia, and Myrtle Streets, Narcissus Place and Palolo Avenue connect to Drain Lines A, E and F.

#### **2.2.4 PUKELE STREAM**

Storm runoff from the Carlos Long Street drain system discharges at Outlet-A into Pukele Stream. Pukele Stream begins at the north end of Palolo Valley at the peak of the Koolau Mountain and runs southward for about 12,500' to Outlet-A. See **Figure 2-3**. Pukele Stream is unimproved in upper Palolo Valley, is owned by the adjacent property owners, and connects to Palolo Stream approximately 2,000' south of Outlet-A. The Pukele Stream drainage area north of Outlet-A consists of approximately 874 acres.



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 AND CONSTRUCTION  
 CITY AND COUNTY OF  
 HONOLULU

**JA** Shimabukuro, Endo  
 & Yoshizaki, Inc.  
 Civil & Structural Engineers

CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
 HONOLULU, OAHU, HAWAII  
**PUKELE STREAM  
 DRAINAGE AREA**

FIGURE  
**2-3**

## 2.3 PROJECT NEEDS AND OBJECTIVES

According to the *Siah Report*, “Based upon the hydrological and hydraulic analyses of the system, the existing Carlos Long Street storm drain system including all branches is extremely inadequate for handling a 10-year storm event. Due to high flow velocities, as high as 78.74 feet per second, and steep slopes within the area, entrance control head losses and manhole head losses are very high at each manhole. The accumulation of these losses produces a hydraulic grade line that far exceeds existing ground elevations. At the top of the system, the finished grade elevation is at approximately 523 feet, whereas the hydraulic grade line at this point reaches 1,574 feet. A 10-year storm event would cause overflow conditions at each manhole, catch basin and grated inlet throughout the system.”

The *Siah Report* determined that in order for the existing Carlos Long Street storm drain system to adequately convey storm runoff from a 10-year storm event, manhole head losses and entrance control head losses must be greatly reduced. In order to reduce these head losses and at the same time convey all the storm runoff from a 10-year storm, the *Siah Report* proposed a box drain system that eliminates cross sectional variations and head losses caused by standard manholes. Such a box drain system would be 5’ wide by 4’ high along the steep Carlos Long Street and 6’ wide by 4’ high from the flatter Palolo Avenue to the existing Pukele Stream Outlet. The box drain system would replace the majority of the existing storm drain system along Carlos Long Street to the existing Pukele Stream outlet and all drains that feed the existing system from side streets, catch basins and grated inlets would connect directly to the proposed box drain system. Additionally, manhole covers will be located at all pipe entrances for maintenance of the system.

An option proposed in the *Siah Report* was a separate box drain system along Carlos Long Street to convey storm runoff from the hillside areas upstream of Narcissus Place drain intake structure. This option would utilize the clear space between existing utilities running parallel to Carlos Long Street varying from a minimum of eight feet near Narcissus Place to Myrtle Street to as much as 18 feet from Myrtle Street to Palolo Avenue. This separate box drain system would not service the Carlos Long Subdivision and would have a constant cross section from the Narcissus Place intake structure to the Pukele Stream outlet with no existing Subdivision drain connections.

A field investigation was conducted by the City DDC staff which revealed that the substandard and inadequate existing drain system south of Palolo Avenue is located across private residential properties and under houses without easements. In this built-up area, a new box drain system to replace the existing storm drain system will be costly to reconstruct and very difficult to maintain. DDC determined that the replacement of the existing drain system in this built-up area with a 6’ wide by 4’ high box drain was not feasible and that a new separate hillside box drain with the lower end located in the Palolo Avenue road right-of-way and terminating with new outlet to Pukele Stream was required.

DDC concluded that action was required to mitigate the inadequacy of the existing Carlos Long Street storm drainage system and retained SEY to conduct a study and prepare the *Engineering Report for the Carlos Long Street Drainage Improvements (SEY Report)*. The *SEY Report* was completed in October 2009 and established the new route for the separate hillside drain box option along Carlos Long Street to convey the hillside 10-year storm flow from the existing hillside intake structure upstream of Narcissus Place to Pukele Stream. The *SEY Report* also analyzed routing the separate Carlos Long Subdivision 10-year storm flow within the existing drain system along Carlos Long Street and across the built-up area south of Palolo Avenue to the existing Pukele Stream outlet.

## **2.4 DESCRIPTION OF THE PROJECT**

### **2.4.1 GENERAL**

This subsection describes the proposed separate box drain system along Carlos Long Street and Palolo Avenue to convey storm runoff from the hillside intake structure upstream of Narcissus Place to Pukele Stream. Hydrological and hydraulic analyses in the *Siah Report* indicated that the existing Carlos Long Street drain system, consisting of pipes, concrete ditches, box culverts, manholes, grated inlets, and catch basins, is extremely inadequate to convey runoff from a 10-year storm from the hillside above Narcissus Place and from the Carlos Long Subdivision.

Large runoff volumes, steep slopes with high velocities, inadequate sized pipes, and large manhole entrance control and head losses produce hydraulic grade lines that are very high and above the existing ground elevations. According to the *Siah Report*, a 10-year storm will cause overflows to occur at the intake structure above Narcissus Place with top elevation of about 526.5' and at every manhole, grate inlet, and catch basin along Carlos Long Street to the Pukele Stream outlet when analyzed in accordance with the *Storm Drainage Standards*. The inadequacy of the spine Drain Line A was confirmed by the *SEY Report*.

### **2.4.2 SEPARATE BOX DRAIN SYSTEM**

The separate box drain system is proposed in the *SEY Report* to improve the existing drain system along Carlos Long Street to meet the requirements of the *City Rules Relating to Storm Drainage Standards* and adequately convey separately the 10-year storm flows from the hillside above Narcissus Place and from the Carlos Long Subdivision without overflows. The construction of a new Hillside Drain System is proposed for conveying storm flow from the hillside above Narcissus Place to Pukele Stream and the conversion and modification of the existing drain system along Carlos Long Street to Pukele Stream is proposed to convey storm flow from the Carlos Long Subdivision only.

### 2.4.2.1 HILLSIDE DRAIN SYSTEM

The *SEY Report* proposed that the Hillside Drain System consisting of a box drain to reduce standard City manhole entrance control and head losses and capable of conveying a 10-year storm flow from the hillside above Narcissus Place be constructed generally along an alignment west and adjacent of the existing drain pipes in the Carlos Long Street right-of-way. See **Figure 2-4**. From the reconstructed Intake Structure A-19 above Narcissus Place to Myrtle Street, the box drain will be located in the 8' ± clear space between the existing 36" drain pipes and the property line on the west side of Carlos Long Street. This is the only space available in the narrow 32' road right-of-way for the box drain. Temporary construction easements will be required from the property owners of TMK 3-4-25:35, 67 and 68.

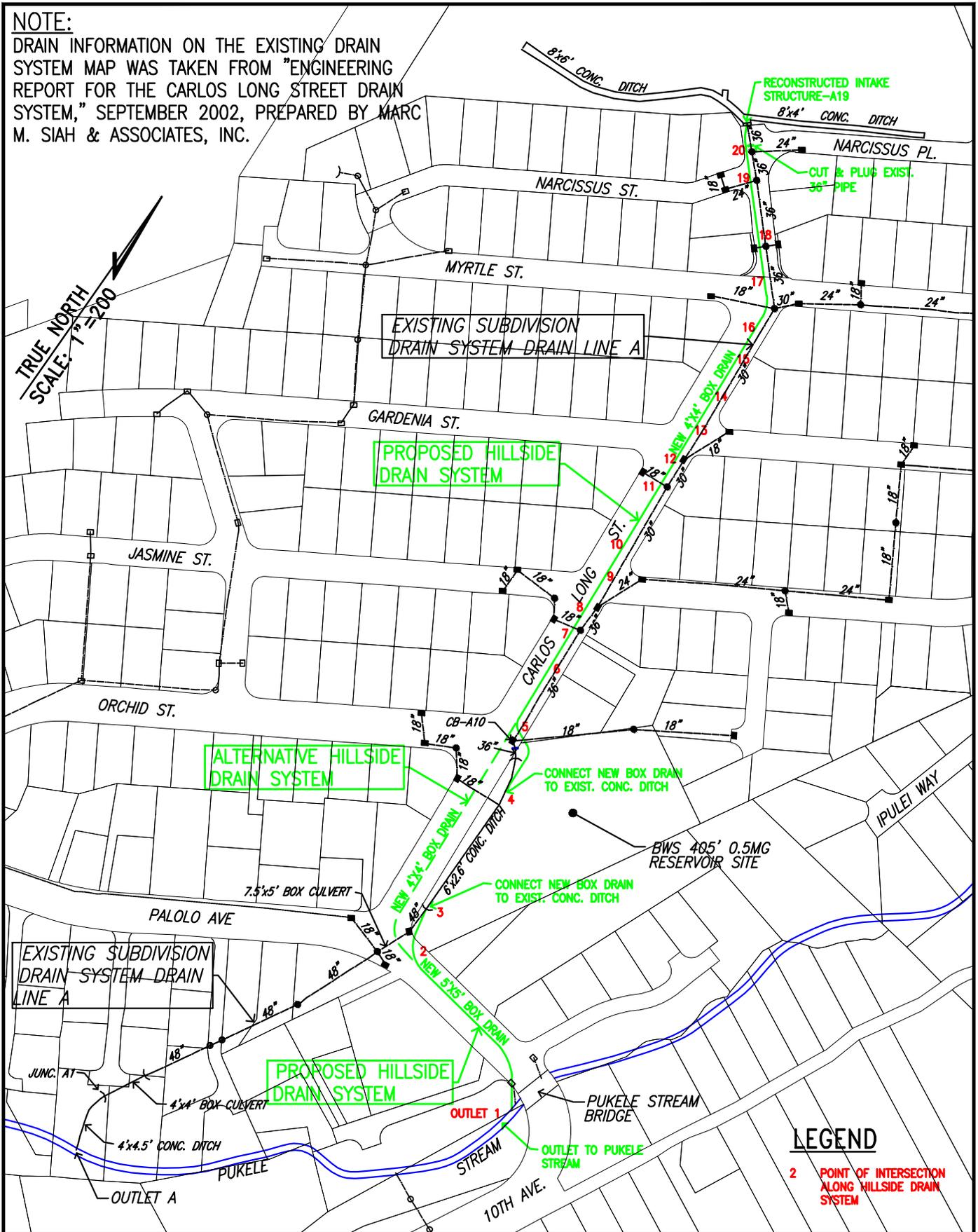
The box drain will proceed southward from Myrtle Street and cross over to the east side of Carlos Long Street in the 18' ± clear space between an existing 12" water line and 30" and 36" drain pipes in the wider 56' road right-of-way to near Orchid Street and connect to the existing 6' wide by 2.6' high concrete ditch of the Carlos Long Street drain system crossing along the west side of the BWS 405' 0.5 MG Reservoir site. The Hillside Drain System will utilize the existing concrete ditch crossing the BWS site Tax Map Key: 3-4-24:44 to convey hillside storm runoff downstream. Drainage easement will be required from the BWS for the box drain connections to the concrete ditch crossing its property. Drain pipes from the Carlos Long Subdivision will not be connected to the Hillside Drain System.

The Hillside Drain System box drain will continue at the south end of the existing concrete ditch in the BWS site and turns eastward in the Palolo Avenue right-of-way with a new alignment to Pukele Stream. The existing drain system south of Palolo Avenue is substandard and inadequate for the combined Hillside and Carlos Long Subdivision 10-year storm flows, except for the concrete ditch from Junction-A1 to Outlet-A and the existing box culvert across Palolo Avenue from CB-A7 to DMH-A6. The existing drain system is located across private residential properties and under houses without easements. In this built-up area, the existing drain system is difficult to maintain, will be costly to reconstruct, and will be used to convey storm runoff from the separate Carlos Long Subdivision Drain System only.

The new Hillside Drain System box drain will be located in the Palolo Avenue 56' road right-of-way in the 15' ± clear space between an existing 12" water line and an 8" sewer main, crosses under an abandoned 8" sewer main, and will terminate with an outlet at Pukele Stream downstream and south of the existing Pukele Stream Bridge across corners of three private properties Tax Map Keys: 3-4-04:01, 3-4-05:64 and 65. Drainage easements will be required from the property owners at these crossings. Pukele Stream is an unimproved stream in upper Palolo Valley and is located across private properties.

**NOTE:**

DRAIN INFORMATION ON THE EXISTING DRAIN SYSTEM MAP WAS TAKEN FROM "ENGINEERING REPORT FOR THE CARLOS LONG STREET DRAIN SYSTEM," SEPTEMBER 2002, PREPARED BY MARC M. SIAH & ASSOCIATES, INC.



**LEGEND**

- 2 POINT OF INTERSECTION ALONG HILLSIDE DRAIN SYSTEM

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 AND CONSTRUCTION  
 CITY AND COUNTY OF  
 HONOLULU



CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
 HONOLULU, OAHU, HAWAII  
**PROPOSED HILLSIDE  
 DRAIN SYSTEM**

FIGURE  
**2-4**

For the Hillside Drain System, the hillside Intake Structure A-19 will require lowering of the existing invert at the inlet by about 2.5' to comply with DPP requirement for minimum cover of 36" over pipes in City roadways. The inlet section will be reconstructed to a 6' wide by 4' high section tapering to about a 4' wide and 4' high section and will lower the hydraulic grade line above the inlet to about 1' above the box drain inlet and 5' below the intake structure top elevation.

The Hillside Drain System box drain will continue as a 4' wide by 4' high section to the existing 8' wide by 5' high concrete ditch crossing the BWS site and from the south end of the existing concrete ditch to Palolo Avenue, and as a 5' wide by 5' high section along Palolo Avenue to the outlet at Pukele Stream. The box drain invert along Carlos Long Street will generally range from 1.5' lower than the existing Carlos Long Street drain line inverts to up to 7.0' lower at crossings under existing sewer, water and drain lines. The box drain invert along Palolo Avenue will be about the same as the existing 7.5' wide by 5.0' high box culvert near the culvert. Existing 8" and 4" water lines along Carlos Long Street will require adjustments at the intersections of Jasmine Street and of Narcissus Street, respectively.

#### **2.4.2.2 Subdivision Drain System**

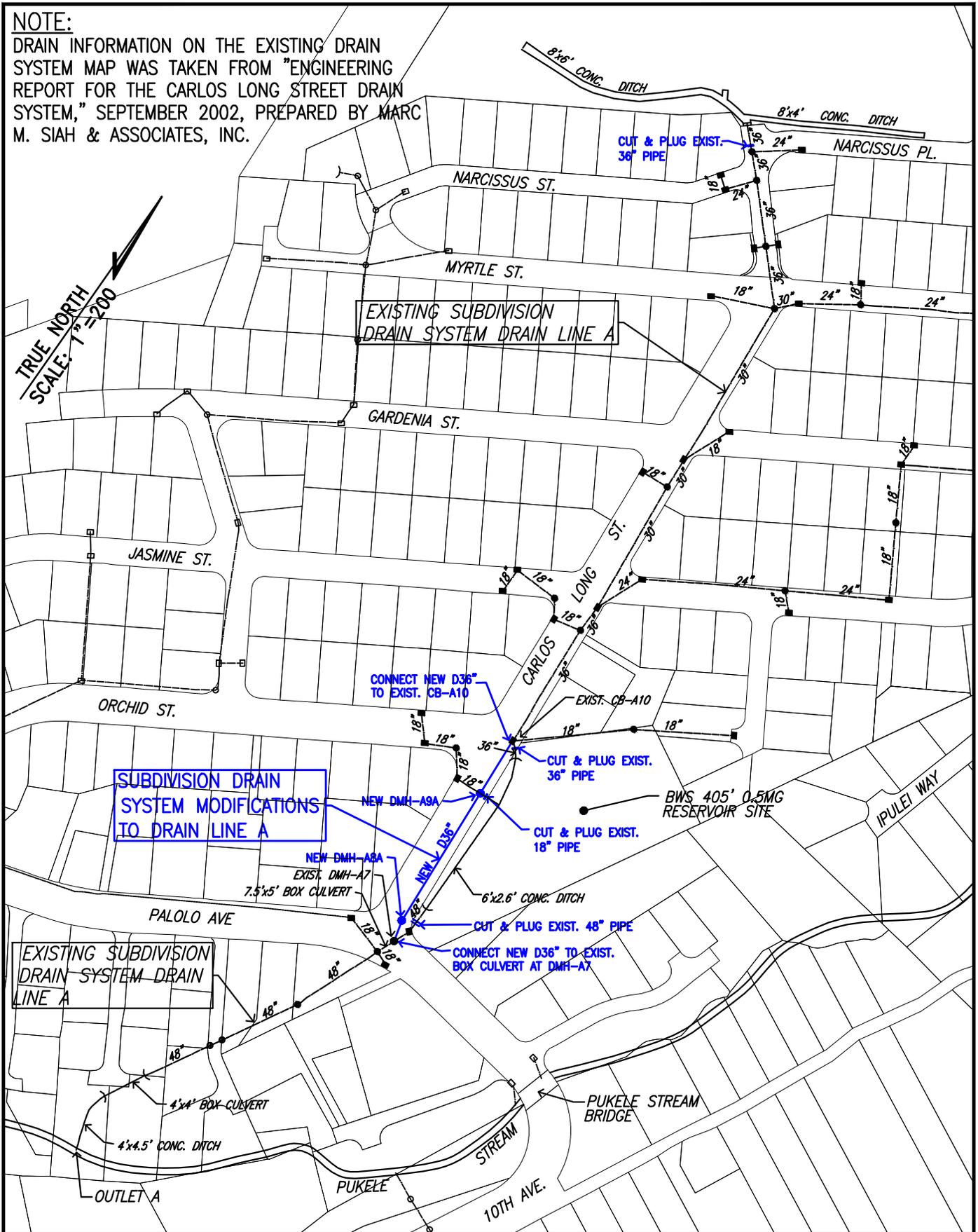
The *SEY Report* proposed that the existing Carlos Long Subdivision drain system be separated from the Hillside Drain System and modified to convey 10-year storm runoff from the existing Carlos Long Subdivision to Pukele Stream. See **Figure 2-5**. From existing CB-A10 on Carlos Long Street near Orchid Street at the northwest corner of the BWS 405' 0.5 MG Reservoir site, Drain Line A of the Subdivision Drain System will be modified to continue southward down Carlos Long Street as a new 36" drain line to new DMH-A9A and DMH-A8A and turn eastward and connect to the existing 7.5' wide by 5.0' high box culvert crossing Palolo Avenue at existing DMH-A7. The Subdivision Drain System will utilize the existing drain system north of existing CB-A10 and south of Palolo Avenue across private residential properties and under houses without easements to convey the 10-year storm runoff from the Carlos Long Subdivision to Pukele Stream. These portions of existing Drain Line A will not require improvements when used for the Subdivision Drain System.

The *SEY Report* concluded that storm runoff from Drainage Area 32 of 21 cfs should remain discharging into the existing concrete ditch in the BWS site and added the runoff to the Hillside Drain System downstream of Junction-A8 to the outlet at Pukele Stream. This increased the Hillside Drain System storm runoff from 195 cfs to 216 cfs but did not increase the size of the box drain from Junction-A8 to the outlet at Pukele Stream. This eliminates the proposed new cutoff ditches adjacent to the tops of the existing concrete ditch proposed for the Subdivision System.

The existing 36" drain pipe from CB-A10 to the BWS site concrete ditch will be abandoned and plugged. The existing 18" drain pipe from the new DMH-A9A to the concrete ditch in the BWS site will be abandoned and plugged.

**NOTE:**

DRAIN INFORMATION ON THE EXISTING DRAIN SYSTEM MAP WAS TAKEN FROM "ENGINEERING REPORT FOR THE CARLOS LONG STREET DRAIN SYSTEM," SEPTEMBER 2002, PREPARED BY MARC M. SIAH & ASSOCIATES, INC.



PREPARED FOR:  
 DEPARTMENT OF DESIGN  
 AND CONSTRUCTION  
 CITY AND COUNTY OF  
 HONOLULU

**JEI** Shimabukuro, Endo  
 & Yoshizaki, Inc.  
 Civil & Structural Engineers

CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
 HONOLULU, OAHU, HAWAII  
**PROPOSED SUBDIVISION  
 DRAIN SYSTEM**

FIGURE  
**2-5**

### **2.4.2.3 Pukele Stream Flows**

The new Hillside Drain System will introduce a new discharge point at Pukele Stream, Outlet 1, near the Pukele Stream Bridge. See **Figure 2-4**. Pukele Stream is an unimproved stream in upper Palolo Valley and is owned by the adjacent property owners. An increase in stream flow will occur between Outlet 1 and Outlet A as a result of this new discharge point. The *SEY Report* estimated the increase in flow and water level in Pukele Stream caused by this additional flow. The peak (maximum) stream flows were estimated using Plate 6 of the *Storm Drainage Standards*. The peak stream flow downstream of Outlet 1 would increase about 300 cubic foot per second (cfs) from its existing peak flow of 3,300 cfs to its future peak flow of 3,600 cfs. The peak flow downstream of Outlet A is 3,750 cfs and is the same for both existing and future conditions.

The HEC-RAS computer program was used for the *SEY Report* to estimate the existing and future water surface profiles between Outlet A and Outlet 1. A comparison of existing and future normal depths for the stream section at Outlet 1 and the stream section 100 feet downstream of Outlet 1 was performed. The results showed that the increase in water surface level for the future peak discharge is not greater than 0.33 feet (4") for both stream sections. The results of comparison of existing and future flow velocities showed that the increase in velocity for the future peak discharge is not greater than 0.43 feet per second for both stream sections. Thus, the increase in peak stream flow is not expected to cause a significant rise in water surface levels and velocity impacts within Pukele Stream between Outlet 1 and Outlet A.

## **2.5 DEVELOPMENT SCHEDULE AND ESTIMATED COST**

The construction of the Carlos Long Drainage Improvements project should commence in the Spring of 2012 and should be completed in 1 year and by the Spring of 2013. The preliminary estimated construction cost for the Carlos Long Street Drainage Improvements prepared without the benefit of detailed construction plans is about \$4,300,000 and will be funded by the City. See **Appendix A**.

The proposed Hillside Drain System and the Subdivision Drain System were discussed in **Subsections 2.4.2.1 Hillside Drain System** and **2.4.2.2 Subdivision Drain System**, respectively, of this document. The drainage improvements will reduce the potential of overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drain system from a 10-year storm event, which will minimize flooding and slowdown of vehicular and pedestrian traffic along Carlos Long Street and Palolo Avenue in the upper Palolo Valley area.

## **2.6 PERMITS/APPROVALS/ EASEMENTS REQUIRED**

The following permits/approvals/easements will likely be required for implementing the Carlos Long Street Drainage Improvements project.

## **2.6.1 Federal Government**

### Department of the Army (DA):

Corps of Engineers DA Permit for Section 404 Activities of Clean Water Act

## **2.6.2 State of Hawaii**

### Department of Health:

National Pollutant Discharge Elimination Systems (NPDES) General Permit  
Chapter 55 Water Pollution Control, HAR, Title 11, State Department of Health, for  
Discharges of Storm Water Associated with Construction  
Community Noise Control Permit

### Department of Land and Natural Resources:

Land Disposition for Improvements  
Stream Channel Alteration Permit

## **2.6.3 City & County of Honolulu**

### Department of Design and Construction:

Environmental Assessment

### Department of Environmental Services:

Operation of Drainage System Approval  
Storm Water Discharges Associated with Construction Activities

### Department of Planning and Permitting:

Drain Connection License  
One-Time-Review of Construction Plans, including Drainage Report  
Point Source Identification Information  
Subdivision Approval for Drain Easement  
Traffic Control Plan  
Trenching Permit

### Department of Transportation Services:

Street Usage Permits

## **2.6.4 Property Owners**

### Temporary Construction Easements:

Owners of parcels TMK 3-4-25:35, 67 & 68

### Drainage Easements:

Owners of parcels Tax Map Keys: 3-4-04:01, 3-4-5:64 and 65 and 3-4-24:44.

## CHAPTER 3 ALTERNATIVES CONSIDERED

### 3.1 PROPOSED ACTION

The proposed action is to construct a separate box drain system as recommended in the *SEY Report* and discussed in **Subsection 2.4.2 Separate Box Drain System** of this document to improve the existing drain system along Carlos Long Street to meet the requirements of the *City Rules Relating to Storm Drainage Standards* and adequately convey separately the 10-year storm flows from the hillside above Narcissus Place and from the Carlos Long Subdivision. The construction of a new Hillside Drain System is proposed for conveying storm flow from the hillside above Narcissus Place to Pukele Stream and the conversion and modification of the existing drainage system along Carlos Long Street to Pukele Stream is proposed to convey storm flow from the Carlos Long Subdivision only. See **Figures 2-4** and **2-5**.

### 3.2 DRAINAGE IMPROVEMENTS ALTERNATIVES

Three alternatives for the Carlos Long Street Drainage Improvements were evaluated. The three alternatives proposed are listed below:

1. Alternative 1 No Action or Delay Action.
2. Alternative 2 Reconstruct Existing Main Drain Line A to a box drain system to adequately convey a 10-year storm runoff from the hillside and the Carlos Long Subdivision as discussed in the *Siah Report*. See **Figure 3-1**.
3. Alternative 3 construct a separate Hillside Drain System as discussed in the *SEY Report*. See **Subsection 2.4.2 Separate Box Drain System** of this document and **Figures 2-4** and **2-5**.

The above alternatives were evaluated to determine if they met the objectives of the City and if they had any significant environmental impacts which would preclude them from selection. Alternative 3 with the separate Hillside Drainage System and the Subdivision Drain System with locations away from areas of significant environmental impacts was selected for the project by the City. This alternative has the least impact on private properties and residents and will provide for the required drainage improvements for Carlos Long Street.

#### 3.2.1 Alternative 1 No Action or Delay Action

Alternative 1 No Action or Delay Action has no environmental impacts or direct costs to the City. The extremely inadequate existing Carlos Long Street storm drain system for conveying a 10-year storm event and causing overflow conditions at each manhole, catch basin, and grated inlet throughout the system will continue to exist.



Alternative 1 No Action or Delay Action is not an acceptable alternative. The City objective of providing and operating an adequate and safe drainage system for present and future City residents would not be met.

### **3.2.2 Alternative 2 Reconstruct Existing Main Drain Line A**

Reconstruction of portion of main Drain Line A to adequately convey a 10-year storm event from the combined hillside and Carlos Long Subdivision for Alternative 2 was discussed in the *Siah Report*. The *Siah Report* determined that in order for the existing Carlos Long Street storm drain system to adequately convey storm runoff from a 10-year storm event, existing manhole head losses and entrance control head losses must be greatly reduced. In order to reduce these head losses and at the same time convey all the storm runoff from a 10-year storm, the *Siah Report* proposed a box drain system in lieu of a pipe drain system that eliminates cross sectional variations and head losses caused by standard City manholes. Such a box drain system would be 5' wide by 4' high along the steep Carlos Long Street and 6' wide by 4' high from the flatter Palolo Avenue to the existing Pukele Stream outlet. The box drain system would replace the majority of the existing storm drain system along Carlos Long Street to the existing Pukele Stream outlet and all drains that feed the existing system from side streets, catch basins and grated inlets would connect directly to the proposed box drain system. Additionally, manholes with covers would be located at all pipe entrances for maintenance of the system. See **Figure 3-1**.

Existing 4.5' wide by 4' high concrete ditch and outlet at Pukele Stream, 7.5' wide by 5' high box culvert across Palolo Avenue and 6' wide by 2.6' high concrete ditch across BWS 405' 0.5 MG reservoir site of Drain Line A are adequate for Alternative 2 and will remain.

Alternative 2 Drain Line A reconstruction is located within City road rights-of-way, except at the BWS 405' 0.5 MG reservoir site where Drain Line A is located in an easement adjacent to the Carlos Long Street right-of-way and south of Palolo Avenue where Drain Line A is located across private residential properties and under houses without easements. In this built-up area, a new reconstructed box drain system to replace the existing pipe drain system will be costly to reconstruct and very difficult to maintain.

Along Carlos Long Street and Palolo Avenue where Drain Line A is located within City road rights-of-way, reconstruction of Drain Line A will have negative impact on adjacent residents and on pedestrian and vehicular traffic along these streets. Drain Line A crosses Orchid, Jasmine, Gardenia, Myrtle, and Narcissus Streets and several driveways. At these intersections and driveways, reconstruction of Drain Line A will have negative impact on traffic. These temporary impacts will be mitigated as discussed in **Chapter IV** of this document.

Alternative 2 will have significant negative impact south of Palolo Avenue where Drain Line A crosses eight private residential properties and under houses. During construction, the residents of these properties will be impacted by construction operations and construction noise. Easements for the Drain Line A reconstruction will be required from the property owners.

The Drain Line A reconstruction will cross existing utility lines and appurtenances. Utility line relocations are anticipated for Alternative 2 since the new box drains will be larger than the existing pipe drains and will conflict with existing utility lines.

### **3.2.3 Alternative 3 Separate Hillside and Subdivision Drain Systems**

Construction of a separate Hillside Drain System and modifying the existing Drain Line A of the Subdivision Drain System to adequately convey a 10-year storm event for Alternative 3 was recommended in the *SEY Report* and is discussed in **Subsection 2.4 Separate Box Drain System** of this document. Alternative 3 does not have the significant impacts to the residential community as noted for Alternative 2. The Alternative 3 route is located away from the eight private residential properties of Alternative 2 south of Palolo Avenue. See **Figure 2-4** and **2-5**.

The Alternative 3 Hillside Drain System is located within City road rights-of-way, except at the BWS 405' 0.5 MG reservoir site where the drain line is located in an easement adjacent to the Carlos Long Street right-of-way and at the proposed outlet south of the Pukele Stream Bridge where the outlet is located across three properties where Pukele Stream is an unimproved Stream owned by the property owners through which it is located. Easement from the BWS will have to be revised and new easements will be required from the three property owners for the outlet at Pukele Stream.

Along Carlos Long Street and Palolo Avenue where Hillside Drain System and the Subdivision Drain System are located within City road rights-of-way, construction of these Drainage Systems will have negative impact to adjacent residents and pedestrian and vehicular traffic along these streets. Hillside Drain System crosses Orchid, Jasmine, Gardenia, Myrtle, Narcissus Streets and several driveways. At these intersections and driveways, construction of the Drainage System will have negative impact on traffic. These temporary impacts will be mitigated as discussed in **Chapter IV** of this document.

#### **3.2.3.1 Alternative 3A Construct Hillside Drain System on Carlos Long Street Below Adjacent to BWS Site**

An alternative alignment for the Hillside Drain System box drain bypassing the BWS 405' 0.5 MG Reservoir site was considered down Carlos Long Street from above CB-A10 near Orchid Street adjacent to the BWS site and turning eastward on Palolo Avenue to Pukele Stream. There is adequate space in Carlos Long Street and Palolo Avenue for a box drain. However, crossing of an existing 7.5' wide by 5.0'

high box culvert would be required. See **Figure 2-4**. Due to the City February 2008 Memorandum minimum cover requirement of 36" over pipes in the City roadways and the limited space over the existing box culvert, crossing over the existing box culvert would require a box drain about 16' wide by 1.5' high or about twenty-eight 18" drain pipes and adjustment of an existing 12" water line and/or an existing 8" sewer main. Crossing under the box culvert would require a 6' wide by 5' high box drain with minimum 22' deep excavations across the existing box culvert site to the outlet at Pukele Stream. The above requirements are extreme, unusual and non-typical for drainlines and Alternative 3A was eliminated from consideration in the *SEY Report*.

### **3.2.3.2 Alternative 3B Drainage Area 32 Addition to Hillside Drain System**

An analysis of tributary Drainage Area 32 shown on **Figure 2-2** indicates the storm runoff of 21 cfs from the area flows by sheet flow to the existing BWS site concrete ditch and is conveyed downstream to the existing 48" drain pipe inlet. For the Hillside Drain System to convey storm runoff from the hillside as proposed by the Separate Box Drain System of **Subsection 2.4.2.1 Hillside Drain System** of this document, the runoff from Drainage Area 32 should be cut off by new cutoff ditches adjacent to the tops of the existing concrete ditch in the BWS site and conveyed to a new grated inlet or catch basin and discharged downstream to the existing 48" drain pipe of the Subdivision Drain System.

An alternative to the above action is to replace the existing concrete ditch in the BWS site with a new box drain to convey storm runoff from the Hillside Drain System and supplemented with a smaller concrete ditch constructed over the top slab of the box drain to collect and convey storm runoff from Drainage Area 32 to a new grated inlet or catch basin and discharged downstream to the existing 48" drain pipe of the Subdivision Drain System. This alternative with a new box drain for the Hillside Drain System supplemented with a smaller concrete ditch over the top slab to replace the existing concrete ditch for the Subdivision Drain System will be much more costly than the proposed new cutoff ditches adjacent to the tops of the existing concrete ditch and was eliminated from consideration in the *SEY Report*.

Another alternative collects the storm runoff from Drainage Area 32 of 21 cfs into the existing concrete ditch in the BWS site and adds the runoff to the Hillside Drain System downstream of the site to the outlet at Pukele Stream. This alternative will increase the Hillside Drain System storm runoff from 195 cfs to 216 cfs but will not increase the size of the box drain from downstream from the BWS site to the outlet at Pukele Stream as noted in **Subsection 2.4.2.2 Subdivision Drain System** of this document. This alternative will not add costs to the Hillside Drain System, will have no significant environmental impacts, and was selected for the project in the *SEY Report*.

### **3.2.4 Conclusion**

Construction of the Alternative 3 separate Hillside Drain System and modification of the existing Drain Line A will have negative impact on traffic. These temporary traffic impacts will be mitigated as discussed in **Chapter IV**. Construction of the proposed Hillside Drain System will have no impact on the eight private residential properties south of Palolo Avenue which existing Drain Line A crosses. The significant negative impacts to the residents of these properties by construction operations and noise for Alternative 2 will be avoided.

The Hillside Drain System will cross over, under, or around all existing utility lines and appurtenances. Existing 8" and 4" water lines along Carlos Long Street will require adjustments at the intersections of Jasmine Street and Narcissus Street, respectively. No other utility line relocations are anticipated.

Because Alternative 3 effectively improves the Carlos Long Street drainage system with no significant environmental impacts to the residential community as Alternative 2, this alternative was selected by the City for the project.

### **3.3 CONSTRUCTION ALTERNATIVES**

Three alternative construction methods were evaluated for the Carlos Long Street Drainage Improvements. Two of the methods, microtunneling and horizontal directional drilling (HDD) are trenchless technologies that were considered, in addition to conventional open trench construction.

#### **3.3.1 Microtunneling Alternative**

Microtunneling is a remotely controlled, guided pipe jacking process in which a circular tunnel is drilled by a microtunnel-boring machine from a jacking pit to a receiving pit along a predetermined path. The microtunneling machine is pushed through the earth using hydraulic jacks carefully mounted and aligned in the jacking pit. A pipeline is usually installed by continuously joining and pushing pipe sections behind the advancing microtunnel boring machine. Jacking and receiving pits require large work spaces, typically 15 feet wide and 25 feet in length and must be set up at each change in horizontal and vertical alignment. For box drains, the void space between the tunnel and the box drain must be filled solid with a lean concrete grout.

Microtunneling is normally selected when a new circular pipeline with few alignment changes are required in a developed, highly congested area with numerous underground utilities such that other construction methods are not applicable. The box drain for this project is in an urban area, is likely to consist of many changes in alignment to avoid existing utility lines and maintain minimal cover, and will required void space grouting. This method would add significantly to the construction cost due to the need for new jacking and receiving pits at each alignment change and the

requirement for grouting of the void spaces. The extra time required for set up and grouting would also lengthen the construction schedule prolonging the inconvenience to local residents, pedestrians and vehicular traffic. Thus, the microtunneling alternative was eliminated from consideration for this project.

### **3.3.2 Horizontal Directional Drilling Alternative**

Horizontal directional drilling (HDD) is a remotely-controlled, trenchless process for installing circular pipelines across obstacles such as rivers, streams, and other environmentally sensitive areas where construction by trenching and excavation would be difficult or impossible. A pilot hole is drilled from the rig site at a prescribed angle and continues under and across the obstacle along a design profile and alignment made up of straight tangents and long radius arcs. The directional control is maintained by an electronic package through which data is transmitted back to the surface where calculations are made as to the location of the cutting head. After the pilot hole is completed, the hole is enlarged to a suitable diameter for the pullback of the pipeline by “prereaming” the hole to successively larger diameters. Once the drilled hole is sufficiently enlarged, the pipeline is pulled through it. The pipe product may consist of high-density polyethylene, steel or other suitable material. For box drains, the void space between the drilled hole and the box drain must be filled solid with a lean concrete grout.

HDD requires a work area at the rig site of a minimum 100 feet wide by 150 feet long. The drilling operation uses large volumes of water for the mixing of the drilling slurry; thus, a nearby source of water is necessary. In addition, a 20-foot cover is typically provided to prevent blowout.

When performing in the residential areas, HDD will generate significant impacts on traffic and surrounding residential environment due to the requirement of a large work area at the rig site of at least 100 feet by 150 feet and a working area at least 50 feet by 150 feet at the pipe jointing and layout site. This is likely to cause inordinate inconvenience to residents, commuters and traffic. In an urban area with many alignment changes of the box drain to avoid existing utilities, numerous rig site setups will be required. Grouting the void space will be required. HDD will add significantly to the construction cost. Thus, the HDD alternative was eliminated from consideration for this project.

### **3.3.3 Open Trench Cut and Cover Alternative**

Conventional open trench cut and cover construction is currently the most common and traditional method of pipeline installation. An open trench is excavated, the new pipeline is installed, the trench is backfilled, and the ground surface is restored. This method of construction is proposed for this drainage improvements project. Negative impacts on traffic and surrounding residential and stream environment will occur and will be mitigated as discussed in **Chapter IV**. Flowable fill or controlled

low strength material will be evaluated and considered for backfill material to mitigate negative impact of inadequate backfill compaction.

Shoring and sheeting or other excavation support system will be required along the entire drain line alignment because of the close proximity to existing structures and the depth of trenches required for drain line construction. Dewatering of excavations will be required in areas where groundwater is encountered in the open trench. Shoring, sheeting and dewatering operations will conform to applicable Federal, State and local regulations.

Open trench cut and cover construction methods will be left to the contractor. At the Pukele Stream outlet, construction will be permitted only during dry periods when there is little or no stream flow and across one-half of the stream at a time. Construction will be temporarily suspended during periods of heavy rainfall. The trenching method may not require a DA Permit nor authorization under the U.S. Army Corps of Engineer's General or Nationwide Permit. The U.S. Army Engineer District, Honolulu will review the project's Draft EA and determine whether a DA Permit is required. A Department of Land and Natural Resources Commission on Water Resource Management Stream Channel Alteration Permit will be required for the new Pukele Stream outlet.

### **3.4 ALTERNATIVES PRELIMINARY ESTIMATED CONSTRUCTION COSTS**

Alternative 1 will have no cost to the City.

Alternative 2 preliminary estimated construction cost for reconstruction of Drain Line A to a box drain system to adequately convey the combined Hillside and Carlos Long Subdivision 10-year storm event is \$5,800,000.

Alternative 3 preliminary estimated construction cost for construction of a separate box drain Hillside Drain System and modifying the existing Drain Line A of the Subdivision Drain System with relocations away from area of significant impacts is \$4,300,000. See **Appendix A**. Alternative 3 alignment was selected by the City and is estimated to cost \$1,500,000 less than Alternative 2. Construction is anticipated to commence in the spring of 2012 and should be completed in one year. The construction cost of \$4,300,000 will be funded by the City.

## **CHAPTER 4**

### **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This chapter describes the existing surrounding environment, provides an assessment of potential construction and operational environmental impacts and proposes mitigative measures to adverse impacts associated with the construction and operation of the proposed project.

#### **4.1 PHYSICAL ENVIRONMENT**

This section describes the existing physical environment present in the vicinity of the project site.

##### **4.1.1 Climate**

The climate of urban Honolulu is relatively moderate throughout the island. Temperatures have small seasonal variations of 7 degrees between the warmest months (August and September) and the coolest months (February and March) and about 12 degrees between day and night. The project site in upper Palolo Valley is lush and green with temperatures ranging from 65 degrees to 85 degrees Fahrenheit throughout the year. Mean annual rainfall in the project vicinity can reach 120 inches per year.

Winds are predominantly “trade winds” from the east-northeast except for occasional periods when “Kona” storms may generate strong winds from the south or when the trade winds are weak and land breeze to sea breeze circulations develop. Wind speeds vary between about 5 and 15 miles per hour providing relatively good breezes. The proposed project will have no short-term or long-term impact on the climate at the project site and surrounding areas.

##### **4.1.2 Topography and Soils**

###### **4.1.2.1 Topography**

The drainage area topography of the Carlos Long Watershed generally slopes downward from north to south (Waahila Ridge to discharge points at Pukele Stream). See **Figures 2-1** and **2-2**. The upper two-thirds Hillside portion of the Watershed consists of preservation lands and is like a trough running down the western slopes of upper Palolo Valley from Waahila Ridge to the concrete diversion ditches above Narcissus Place. Storm runoff created in the trough area generally sheet flows downslope to the existing concrete ditches and flows to the intake structure at the upper end of Carlos Long Street above Narcissus Place.

The lower one-third Subdivision portion of the Watershed consists of urbanized residential lands that generate storm runoff from the Carlos Long Subdivision. The

Carlos Long Street drain system is located in this area along the western slopes of upper Palolo Valley between elevations of 296 and 523 feet mean sea level. See **Figure 2-2**. The ground along the system slopes steeply downward in the southerly direction with an average slope of 5 to 20 percent. Storm runoff created in the Subdivision areas generally sheet flows to existing catch basins along the connecting cross streets and is conveyed by drain lines to the spine drain line on Carlos Long Street to Pukele Stream. The general, topography in and around the area slopes downward southerly towards the Pukele Stream. Pukele Stream is a perennial stream. There is no wetland on or near the project site. The waters of the United States (U.S.) as represented by Pukele Stream and any tributaries to it, are in and adjacent to the Carlos Long Street Drainage Improvements project site.

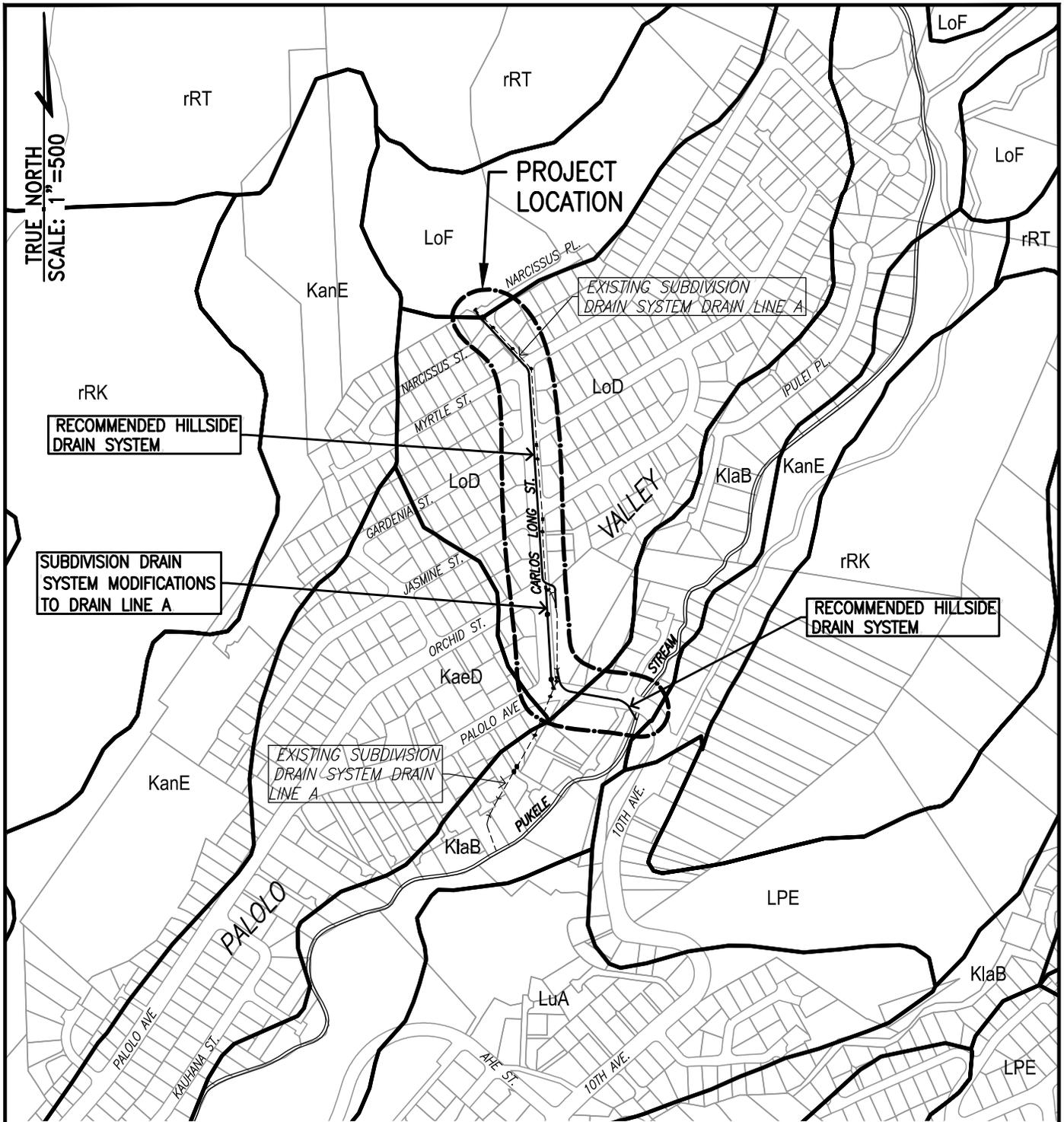
#### **4.1.2.2 Soils**

The Soil Survey of Island of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii (U.S. Department of Agriculture Soil Conservation Services, 1972) identified the soils in the project area as Kaena stony clay (KaeD) and Kaena very stony clay (KanE), Kawaihapai stony clay loam (Kl-aB) and Lolekaa silty clays (LoD and LoF). See **Figure 4-1**.

The Kaena series consist of very deep, poorly drained soils on alluvial fans and talus slopes. These soils developed in alluvium and colluvium from basic igneous material. Terrain containing this series is gently sloping to steep and are commonly stony. Elevations range from 50 to 150 feet. KaeD soils occur on 12% to 20% slopes. Runoff is medium and the erosion hazard is moderate. KanE soils occur on 10% to 35% talus slopes and alluvial fans. There are many stones on the surface and in the profile. Runoff is medium to rapid, and the erosion hazard is moderate to severe. Workability is difficult because the soil is stony, steep, and very sticky and very plastic.

The Kawaihapai series consist of well-drained soils in drainage-ways and on alluvial fans on the coastal plains. These soils formed in alluvium derived from basic igneous rock in humid uplands. Terrain containing this series is nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet. Kl-aB soils occur on 2% to 6% slopes. There are enough stones to hinder, but not prevent cultivation. Runoff is slow, and the erosion hazard is slight.

The Lolekaa series consist of well-drained soils on fans and terraces. These soils developed in old, gravelly colluvium and alluvium. Terrain containing this series is gently sloping to very steep. Elevations range from nearly sea level to 500 feet. LoD soils occur on 15% to 25% slopes. This soil is on side slopes of terraces and along drainage-ways. Runoff is medium, and the erosion hazard is moderate. Workability is slightly difficult because of the slope. LoF soils occur on 40% to 70% slopes. This soil occurs along drainage-ways and on fans adjacent to the Koolau Range. Runoff is rapid, and the erosion hazard is severe. It is impractical to cultivate this soil.



SOURCE: U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE.

**LEGEND:**

- |   |   |
|---|---|
| KaeD - Kaena stony clay, 12 to 20 percent slopes.         | LoF - Lolekaa silty clay, 40 to 70 percent slopes.            |
| KanE - Kaena very stony clay, 10 to 35 percent slopes.    | LPE - Lualualei extremely stony clay, 3 to 35 percent slopes. |
| KlaB - Kawaihapai stony clay loam, 2 to 6 percent slopes. | LuA - Lualualei clay, 0 to 2 percent slopes.                  |
| LoD - Lolekaa silty clay, 15 to 25 percent slopes.        | rRK - Rock land.  |
|   | rRT - Rough mountainous land.                                 |

PREPARED FOR:  
 DEPARTMENT OF DESIGN  
 AND CONSTRUCTION  
 CITY AND COUNTY OF  
 HONOLULU



CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
 HONOLULU, OAHU, HAWAII  
**SCS SOIL SURVEY**

FIGURE  
**4-1**

#### **4.1.2.3 Probable Construction Impacts and Mitigative Measures**

The City's proposed action is discussed in **Chapter 2 Project Description** of this document. In summary, ultimately approximately 2,008 lineal feet of drain lines will be constructed for the project by open trench cut and cover. The existing topography will be restored to existing conditions and no changes will be made to the existing soils. The proposed project will have minor short-term impacts and no long-term impacts on existing topography and soils, except for the new Outlet 1 at Pukele Stream. Outlet 1 is located at Pukele Stream in waters of the U.S., which will be impacted by construction of project structures, the associated ground disturbing activities, and the influx of potential contaminants to the receiving waters of Waiomao and Palolo Streams and the Ala Wai Canal.

Conventional open trench cut and cover construction is the traditional method of underground box drain construction. See **Subsection 3.3.3 Open Trench Cut and Cover Alternative** of this document. This method will require open trench excavation, construction of box drain, trench backfilling, and ground surface restoration and is common and familiar to local contractors.

Construction of the new Outlet 1 structure will impact existing topography and soils by probable regrading the Pukele Stream banks and invert and by placement or discharge of dredged and/or fill material below the ordinary high water mark of Pukele Stream. Also, during construction, the influx of potential contaminants to the receiving waters of Waiomao and Palolo Streams and the Ala Wai Canal may occur. The influx of contaminants should not be any more than existing since the drainage areas remain the unchanged. A Department of the Army (DA) Permit for Section 404 activities of the Clean Water Act from the DA Corps of Engineers (Corps) is anticipated for the construction work at Pukele Stream. During design and plans preparation phases of the project, close coordination will be maintained with the Corps to ensure compliance with the Clean Water Act and that construction will not adversely impact Pukele Stream and downstream areas.

Fugitive dust is expected because construction activities will involve trenching, excavation, backfilling, and restoration. Mitigative measures to alleviate fugitive dust formation include the implementation of a watering program to minimize soil loss from fugitive dust particle emissions and the planting of vegetation as soon as practical on bare surfaces. Odor from construction vehicles and equipment should be short-term and minimal as discussed in **Subsection 4.1.5 Air Quality** of this document. Construction noise should not have a significant impact on noise sensitive resources such as schools and residences due to the construction activity occurring as discussed in **Subsection 4.1.6 Noise** of this document. Traffic disturbances on Carlos Long Street and Palolo Avenue will occur due to movement of construction vehicles and equipment but should be minimal and short-term. A traffic control plan will be required since work will be performed in City streets as discussed in **Subsection 4.5.5 Transportation Facilities** of this document.

Best Management Practices (BMP) and erosion control plans will be incorporated into the construction plans to address the potential short-term impacts of influx of contamination during construction and implemented by the Contractor. Necessary permits from the City will be obtained which will include the preparation of plans subject to City review and approval for implementation. In addition, construction activities will comply with pertinent Hawaii Administrative Rules of the State DOH such as Title 11, Chapter 46 (Community Noise Control), and Chapter 60 (Air Pollution Control). These measures will mitigate short-term impacts of construction activities on the topography and soils of surrounding environment. There will be no long-term impact resulting from the construction and operation of this project, except for the new Outlet 1 structure, which should have a long-term impact on topography but is minimal as discussed above.

### **4.1.3 Hydrogeological Resources**

This section provides a description of the hydrogeologic resources on Oahu and the potential impacts associated with the construction of the Carlos Long Street Drainage Improvements project.

#### **4.1.3.1 Hydrogeology**

A regional aquifer-system analysis by Nichols, W.D., et. al., divided Oahu's groundwater resources into seven areas based on geologic and hydrologic characteristics. According to the analysis, Oahu's aquifers are possible due to the presence of low-permeable sedimentary deposits and caprock that confine freshwater from discharging into the ocean, thus allowing the freshwater to build up to a greater thickness than would be possible in an unconfined setting. This confinement creates a freshwater lens that varies throughout the aquifer. Of the seven, the Waianae Volcanoes and Koolau Basalts are the two largest aquifers. The Carlos Long Street Drainage Improvements site is located in the Southern Oahu aquifer that receives groundwater from rainfall and underground water movement from the Koolau rift zone aquifers. The water table in the vicinity of the project site is approximately 27 feet above mean sea level. The lowest invert of the proposed drainage improvement project is 336 feet above mean sea level. Construction of drainage improvements for the proposed project will have no short-term or long-term adverse impact on the Southern Oahu aquifer.

The coastal waters of the Pukele Stream receiving waters are of good quality because of disposal of municipal, residential, and industrial wastes have been much improved or eliminated by land treatment and water-reuse practices. Coastal waters in the vicinity of the project area are designated as Class A waters and their use for recreational purposes and aesthetic enjoyment is protected by treatment or control compatible with the criteria establishes for this class according to State DOH, HAR 11-54, Water Quality Standards.

#### **4.1.3.2 Probable Impacts and Mitigative Measures**

The construction of the Carlos Long Street Drainage Improvements project is expected to have minimal impact on Oahu's groundwater resources. The construction work should not change the amount of localized groundwater recharge occurring at the project site and is expected to have negligible and ultimately inconsequential impact to the overall function of the areas natural hydrological system.

Construction of the drainage improvements may result in short-term impacts on Pukele, Waiomao and Palolo Streams, Ala Wai Canal and the coastal receiving waters. It is expected that the construction activities such as trenching may result in localized silt runoff during construction that has a potential to enter streams, canal, and coastal waters and have some minor short-term impacts on water quality. However, best management practices (BMP) as discussed in **Subsection 4.1.2.3 Probable Construction Impacts and Mitigative Measures** of this document will be incorporated into design plans and will be implemented by the construction contractor to minimize the short-term impacts of silt runoff on streams, canal, and coastal waters.

In addition, plans will be reviewed by pertinent government agencies for comments and approval prior to construction. Storm water discharge associated with construction activities will also require coverage under the NPDES Permit system. Therefore, impacts on streams, canal, and coastal waters water quality will be minimal or minor and short-term because the contractor will employ approved measures to prevent silt runoff from construction areas along with complying with other permits.

The impact on Ala Wai Canal, the nearest water resource, will be minimal and short-term and will not impact canoeing activities. The impact on coastal waters downstream of Ala Wai Canal will be minor and not detectable and will not impact surfing, canoeing, and boating activities.

#### **4.1.4 Natural Hazards**

This section addresses only those natural and urban-related hazards applicable to the Carlos Long Street Drainage Improvements project site. Of the potential natural hazards, earthquakes, hurricane, and flood hazards are applicable. These natural hazards are addressed below. There are no other potential urban-related hazards applicable to the project site such as airport clear zones, nuisances, or hazardous waste issues associated with this project.

#### **4.1.4.1 Earthquake Hazard**

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions resulting from the inflation or shrinkage of magma reservoirs beneath which shift segments of the volcano. Oahu is periodically subject to episodes of seismic activity of varying intensity. Available historical data indicated that the number of major earthquakes occurring on Oahu have generally been less and of lower magnitude compared with other islands such as Hawaii.

Although the possibility of earthquakes on Oahu has been lower than other islands, potential hazards may result from an earthquake of sufficient magnitude. Earthquakes cannot be predicted with any degree of certainty or avoided, and an earthquake of sufficient magnitude (greater than 5 on the Richter Scale) may cause potential damage to constructed drainage improvements. However, damage to these facilities will be minimized by following appropriate City Building Code requirements. Thus, the risk of potential damage to the proposed drainage system improvements will not be more than other existing land uses or infrastructure facilities on Oahu.

#### **4.1.4.2 Hurricane Hazard**

A hurricane of significant strength with high winds and rainfall passing close to the island of Oahu could cause damage to the Carlos Long Street Drainage Improvements and surrounding areas. The potential for damages to the project improvements would be no less than that for residences and buildings in other areas of Oahu.

To minimize damage during a hurricane or high wind event, the drainage improvements will be designed and constructed in conformance to applicable City Building Code standards. The risk of potential damage from hurricane with high winds and rainfall should not be more than for other existing facilities on the island of Oahu.

#### **4.1.4.3 Flood Hazard**

The project site and residential areas surrounding the project site fall within Flood Zone X designated on the Flood Insurance Rate Map (FIRM) Community Panel Number 15003C0370F (revised September 30, 2004), prepared by the Federal Emergency Management Agency. Flood Zone X is defined as areas determined to be outside the 0.2% annual chance flood plain. The Flood Insurance Program does not have any regulations for developments within Flood Zone X. The project site is also outside the of the tsunami inundation area.

Hydrological and hydraulic analyses in the *Siah Report* indicated that the existing Carlos Long Street drain system, consisting of pipes, concrete ditches, box culverts, manholes, grated inlets, and catch basins, is extremely inadequate to convey runoff from a 10-year storm from the hillside above Narcissus Place and from the Carlos

Long Subdivision. See **Figure 1-2**. According to the *Siah Report*, a 10-year storm will cause overflows to occur at the intake structure above Narcissus Place with top elevation of about 526.5' and at every manhole, grate inlet, and catch basin along Carlos Long Street to the Pukele Stream outlet when analyzed in accordance with the *Rules Relating to City's Rules Relating to Storm Drainage Standards*. The short-term and long-term inadequacy of the spine Drain Line A was confirmed by the *SEY Report*.

Construction of the Carlos Long Street Drainage Improvements as discussed in **Subsection 2.4.2 Separate Box System** of this document and shown in **Figures 2-4** and **2-5** is proposed to improve the existing drain system along Carlos Long Street to meet the requirements of the *Rules Relating to Storm Drainage Standards* and adequately convey separately the 10-year storm flows from the hillside above Narcissus Place and from the Carlos Long Subdivision. The construction of a new Hillside Drain System is proposed for conveying storm flow from the hillside above Narcissus Place to Pukele Stream, and the conversion and modification of the existing Drain Line A along Carlos Long Street to Pukele Stream is proposed to convey storm flow from the Carlos Long Subdivision only. The proposed project will correct the inadequacies of the existing drainage system and will have no short-term or long-term adverse impact on the existing drainage system at the project site and surrounding areas.

The Ala Wai Watershed Project is a multi-purpose project being currently undertaken by the U.S. Army Corps of Engineers (USACE) in partnership with the State Department of Land and Natural Resources (DLNR), and the City. The Ala Wai watershed is located in southeastern portion of the island of Oahu, and generally includes the area between Punchbowl Crater and Diamond Head Crater from the crest of the Koolau Mountains to the nearshore waters. The watershed encompasses a land area of more than 16 square miles (approximately 12,000 acres), and includes Palolo Valley and its Hillside and Subdivision drainage area of the Carlos Long Street Drainage Improvements project which eventually drains to the Ala Wai Canal.

The goal of the Ala Wai Watershed project is to improve the overall quality of the watershed from the crest of the Koolau Mountains to the nearshore waters while minimizing the risk of flood damages to the public. Project objectives include flood risk management and ecosystem restoration. The project is currently in the Feasibility Phase, which includes formulation of alternative plans, evaluation of each plan (including preparation of an Environmental Impact Statement (EIS), and selection of the recommended plan. The Feasibility Phase should be completed by the winter of 2012. The Carlos Long Street Drainage Improvements project should not impact on the Ala Wai Watershed project since the limits of the Ala Wai Watershed has not been changed by the project.

#### **4.1.5 Air Quality**

The Department of Health, Clean Air Branch monitors ambient air quality through the Air Surveillance and Analysis Section of the State Laboratories Division to comply with the U.S. Environmental Protection Agency (EPA) national ambient air quality standards (NAAQS). In addition to NAAQS, Hawaii established a standard for hydrogen sulfide. There are nine (9) monitoring stations on Oahu, five (5) on Hawaii and Kauai and Maui each have one (1).

##### **4.1.5.1 Air Quality**

There are no point source emissions associated with the proposed project. Clearing, grubbing of trees and shrubs, trench excavations, and vehicular operations moving materials to and from the site could temporarily increase fugitive dust in the air as well as odor and exhaust from the construction equipment. Air quality will be in compliance with State and Federal requirements. The nearest monitoring station to the project site is located approximately 4.25 miles west in downtown Honolulu atop of the Department of Health Building at 1250 Punchbowl Street. This monitoring site monitors PM<sub>10</sub>, PM<sub>2.5</sub>, CO, and SO<sub>2</sub> speciation as part of EPA's particulate matter speciation monitoring program.

Due to the effects of the trade winds and lack of stationary point source pollutants, the air quality is generally good. The 2008 Annual Summary of Hawaii Air Quality Data also states that Hawaii's air quality is one of the best in the nation, and criteria pollutant levels remain well below state and federal ambient air quality standards.

##### **4.1.5.2 Probable Impacts and Mitigative Measures**

Short-term effects during construction include fugitive dust generation during clearing, grubbing, trench excavations, exhaust and odor emissions from vehicles and construction equipment. The construction contractor will be required to comply with Hawaii Administrative Rules (HAR) Title 11, DOH Chapter 60.1 Air Pollution Control that contains restrictions on visible emissions from motor vehicles and fugitive dust generators. The construction manager will be required to inspect the mitigative measures taken by the contractor to maintain proper performance. These impacts should not result in a significant impact or exceed State and Federal ambient air quality standards. The use of approved erosion control plans and mitigative methods such as water sprinkling whenever feasible will reduce potentially adverse air quality impacts.

The contractor will be required to keep all construction equipment and vehicles properly tuned and maintained and to reduce unnecessary idle time to minimize air quality impacts. Odor and exhaust from vehicles and construction equipment will have minimal impact on residences surrounding the project site and will not significantly affect the ambient air quality since construction activities will be limited to the area being worked on at any one time. In compliance with government

regulations, construction activities will be temporary and short-term and is not anticipated to have long-term adverse effects.

#### **4.1.6 Noise**

##### **4.1.6.1 Noise**

The project site is situated within the City R-5 residential district and is in upper Palolo Valley. Under the State DOH Community Noise Control regulations (Title 11, Chapter 46, HAR), the maximum permissible sound levels for construction activities is 55 dBA during daytime (7:00 a.m. to 10:00 p.m.) hours and 45 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.). These levels may not be exceeded at or beyond the property line for more than 10 percent of any continuous 20-minute period.

Noise from construction activities, vehicles and equipment will impact residences near the project site. Noise generated during the construction period will not significantly increase the ambient noise level and will only be short-term. The proposed project is not anticipated to have long-term adverse impacts. No nighttime work is anticipated.

##### **4.1.6.2 Probable Impacts and Mitigative Measures**

Noise impacts from construction activities, vehicles and equipment will be mitigated by requiring the contractor to consult with residences to set up a schedule that will minimize noise impacts. Anuenue School is located immediately south of the project site on the makai side of 10<sup>th</sup> Avenue. Noise generated from construction activities is not anticipated to increase ambient noise levels on the campus grounds of the Anuenue School.

The contractor will be required to apply current techniques and methods of sound attenuation and abatement such as installing noise-reducing mufflers to construction equipment, machines, on-site vehicles and devices requiring exhaust of gas or air. Proper maintenance of construction machines and vehicles will be performed to reduce unnecessary noise. The contractor will be required to obtain a Community Noise Control Permit from the DOH and observe and comply with HAR Title 11, DOH, Chapter 46 Community Noise Control to protect the public from the effects of noise from construction activities. Restrictions on noise levels and operational hours of the noisiest equipment will minimize the impacts unto the surrounding communities. Conditions of the Noise Permit shall be enforced and violators penalized by the Director of DOH. Nighttime work is not anticipated for the project.

Specific Community Noise Control Permit restrictions for construction activities are:

1. No permit shall allow construction activities creating excessive noise before 7:00 a.m. and after 6:00 p.m. of the same day.

2. No permit shall allow construction activities that create excessive noise before 9:00 a.m. and after 6:00 p.m. on Sundays.
3. No permit shall allow construction activities that exceed the allowable noise levels on Sundays and on holidays.

Construction activities will generally be limited to regular workday hours (8:30 a.m. to 3:30 p.m., Monday through Friday). Construction activities of the project shall be in compliance with the requirements of the Community Noise Control Permit and are not expected to result in a significant noise impact on the surrounding environment.

#### **4.1.7 Visual Resources**

Open-trench construction of the drainage improvements is anticipated to cause a negative impact on the existing views along the drain line alignment. These impacts, however, will be temporary and last for short periods of time at each location until the open-trench is restored to its original condition or better. In addition, the type of construction is expected to only partially affect views of adjacent areas.

The existing landscape along the alignment is predominantly comprised of low residential buildings, paved streets, open spaces, and sidewalks with planter strips. Construction areas will have subsurface drainage improvements that will not be visible from above ground, except for proposed Outlet 1 at Pukele Stream. There will be no long-term adverse impact of drainage improvements on the surrounding visual environment.

### **4.2 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES**

#### **4.2.1 Background**

Cultural Surveys Hawaii, Inc. (CSH) conducted a Cultural Impact Assessment (CIA) for the Carlos Long Street Drainage Improvements project in compliance with the State environmental review process HRS Chapter 343, which requires consideration of a proposed project's effect on cultural practices. CSH has prepared the CIA at the request of SEY. Through document research and cultural consultation efforts, the CIA provides information pertinent to the assessment of the proposed project's impacts to cultural practices and resources.

Historical documents, maps and existing archaeological and cultural information pertaining to sites in the vicinity of the project were researched by CSH at the State Historic Preservation Division (SHPD) library, CSH library, the University of Hawaii Hamilton Library, Hawaii State Archives, State Land Survey Division, and archives of the Bishop Museum. The Office of Hawaiian Affairs, Oahu Island Burial Council and members of other community organizations were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. Information on Land Commission Awards

was accessed through Waihona Aina Corporation's Mahele Data Base (www.waihona.com). The names for potential community contracts were also obtained from colleagues at CSH and from the researcher's familiarity with the families who live in the area.

Information provided in the following **Subsections 4.2.2 through 4.2.4** were taken from *Cultural Impact Assessment for the Carlos Long Street Drainage Improvements Project, Palolo Ahupuaa, Honolulu (Kona District) Oahu Island. (TMK [1] 3-4-04, 05, 11, 12, 20, 24, 25, October 2010* prepared by CSH for this DEA.

#### **4.2.2 Results of Background Research**

1. The early settlers of Oahu were attracted to windward Oahu for its heavy rainfall, permanent stream flow, and fertile soils for the cultivation of taro and other crops. Occupation of the leeward side of Oahu initially focused along the coastal areas. By the mid-1400s, Hawaiians had started to use and occupy certain leeward valleys with intermediate rainfall but with more variable streams, especially Manoa Valley. Archaeological excavations and surveys as well as historic documents suggest that Hawaiians once also cultivated extensive *loi kalo* (irrigated taro terraces) in the adjacent lower valley of Palolo which was susceptible to extreme conditions of flooding and drought. The Anuenue School developed and currently maintains a series of *loi kalo* behind the School along Pukele Stream just south of the project area. These terraces are probably located in a former agricultural field.

2. The *ahupuaa* (land division usually extending from the uplands to the sea) of Palolo was formerly called Kaluahini and stretched from the Koolau Mountains to the Waikiki shore. It was most likely truncated from the sea when the village of Waikiki expanded to encompass the coastal lands west of Diamond Head. The term *palolo* (clay or clay valley) refers to blueish-white or gray clay found generally in Palolo Valley that Hawaiians formerly used for *laau lapaa* (traditional plant medicine).

3. Palolo *ahupuaa* contains numerous *wahi pana* (storied places), including streams, ridges, *puu* (hills and peaks), *pohaku* (stones), petroglyphs, *heiau* (temple), and *ala hele* (trails), and associated *mooles* (stories, oral traditions) that place the specific project area within a broad cultural context. The project area is located to the west of Pukele Stream in the *ili* (land section) of Pukele and Wailupe.

4. Numerous burial caves have been found during archaeological surveys at the base of Kalaepohaku Ridge above the project area and farther south along the slopes and at the coastal plain. Thomas R. Wolforth and Alan E. Haun conducted an archaeological survey along the project corridor (Carlos Long Street) and throughout the steep terrain north (inland) of the project area specifically to investigate the potential for cultural artifacts and burials in caves and underneath overhangings; they encountered two small caves without cultural artifacts or burials. In addition, W.D. Westervelt describes a great cave extending from Manoa Valley to Palolo Valley that Kamehameha lived in with some of his warriors and a *mooles*

references burial caves in Palolo Valley. There is no documented evidence from archaeological surveys, historical records or oral traditions of *ilina* (burials), burial caves or *iwi kupuna* (ancestral remains) within the project area.

5. The middle nineteenth century marked the introduction of private and public land ownership laws to Hawaiian society during the Mahele (division of Hawaiian lands). Portions of the land of the project area were granted as Land Commission Awards (LCAs) to Mahoe and Kamaha who cultivated numerous plots of taro and some *kula* (dryland) crops of sweet potatoes as well as maintained large fishpond. The exact location of the agricultural plots is unclear from the LCA testimonies, but may include the project area.

6. Severe demographic and land-use changes occurred in the late nineteenth and early twentieth centuries. Many native Hawaiian taro farmers of Palolo Valley died from a bubonic plague epidemic in 1894, and this provided the opportunity for a influx of Chinese immigrants. Carlos Long – the namesake of the project area – bought about 2,000 acres of land in Palolo. Much of the land in Palolo Valley during the 1900's was too swampy, too steep, or too remote for the development of housing subdivisions. The landscaping of a golf course in the 1930's enticed new residents, and the population continued to grow with the Wilhelmina Heights subdivision on Mauumae Ridge and the St. Louis Heights subdivision on Kalaepohaku Ridge.

7. Descendants of Japanese and other immigrant families played in the streams of Palolo Valley and the waters of Waikiki. Mr. Sidney Kosasa recalls how he and his childhood friends caught *opae* (freshwater shrimp) in Palolo Stream in lower Palolo Valley by luring them with dried shrimp and catching them with loops of horsehair, as well as *oopu* (goby) and *dojo* (Japanese; loach).

#### **4.2.3 Results of Community Consultation**

CSH attempted to contact 27 community members and government agency and community organization representatives. Of the 12 people that responded, six *kupuna* (elders) and/or *kamaaina* (Native-born) participated in formal interviews for more in-depth contributions to the CIA. This community consultation indicates:

1. The recollections of Palolo Valley *kamaaina* concerning *wahi pana* and associated *moololo* reveal a strong connection to past traditions and a renewed salience of those traditions today. While these significant cultural places and artifacts are not located in the project area, they place the project area within a broader cultural context. Mrs. Lynette Cruz describes the following cultural artifacts of Palolo Valley: a resonating *pohaku* (stone) called the Bell Stone that valley residents struck to inform their friends near the coast that they were traveling to the beach; *ulu maika* (stone balls); *poi* (pounded taro) pounders, a large head-shaped *pohaku* that were discovered along the banks of Palolo Stream; a *pohaku* located far upstream in the valley that is connected to a *moololo* of two sisters, Yellow Ginger and White Ginger, whose fighting over a lover resulted in one of them turning to

stone; a white boulder, which was brought from Tahiti that served as a marker high in the valley for approaching voyagers; (possibly) numerous cultural sites in the towering, hidden depression of Kaau Crater; and *iwi* that were sealed into burial caves in the valley.

2. *Kamaaina* place special significance on the natural features of Palolo Valley. According to Mrs. Cruz, children molded the sedimentary deposits of *palolo* along the valley streams, including Pukele Stream possibly near the project area, into figurines and toys, and the clay may have been used as mortar in the construction of the Iolani Palace. According to Ms. Velma Kekipi, the rain in Palolo is called *kilihume* (fine light rain) in contrast to the rain that falls in Manoa, *tauhine* or *kuahine* (misty rain).

3. A strong connection to ancestral land is based on lived experiences with *loi kalo*. Mr. Theodore Nakoa's father formerly maintained five *loi* patches on the grounds of Anuenue School downstream of the project area, irrigating them with spring water rather than the nearby Pukele Stream. Previously, Mrs. Cruz discovered nearby ancient terraced walls along Pukele Stream downstream of project area on the present grounds of Anuenue School and assisted in the original restoration of this *loi kalo* in the mid-1990's. The Anuenue School has subsequently developed, maintained, and expanded this terraced garden, which now boasts over 40 species of dryland and irrigated taro.

4. The abundant rainfall and flowing streams in Palolo Valley support the cultivation of other crops as well as the growth of plants that are gathered for religious, medicinal, and other practices. Mrs. Cruz recalls that her grandmother blessed her home with a mixture of *paakai* (salt) and water from the tips of *ki (ti)* leaves cultivated on her property in a process called *pikai* (to purify or remove taboo). Ms. Kekipi remembers that her father gathered *popolo* (glossy nightshade) and *honohono* (dayflower) grass in the valley to heal infections and stop bleeding, respectively, as well as *puoheohe* (Job's tears) to string his leis.

5. Previous *kamaaina* of Palolo *ahupuaa* utilized the freshwater streams and ocean waters and shores for subsistence, as well as recreation. Mrs. Cruz recalls that her mother and grandmother fished and collected *limu* (seaweed) along the beaches of Waikiki, and that her grandfather caught *amaama* (mullet) and used *aku* (bonito or skipjack) heads to lure crabs into nets in the Ala Wai Canal. Downstream of the project area along Pukele Stream is a shallow water-hole called "Fat Man's Pond," which children continue to swim in today.

6. Mrs. Cruz and the four representatives of Anuenue School – Mr. Charles Naumu, Mr. Christopher Yim (known as Kumu [Teacher] Baba), Mr. Steven Young, and Mr. Nakoa – recognize the desire for better runoff control in Palolo Valley, especially since torrential flooding makes the property driveways along the project corridor "resemble rivers." At the same time, Mrs. Cruz is concerned that the proposed project may harm the water quality of Pukele Stream and restrict

practitioners from safely engaging in their cultural practices along the entire length of the stream, especially the restoration of *loi kalo*. In particular, the four representatives of Anuenue School are concerned that the construction of the proposed drainage improvements and any subsequent increase in the volume of water that flows through the Pukele Stream past the School may impact the sustainability of their indigenous cultural and educational practices, as well as potentially harm the students.

Currently, Kumu Baba and other Anuenue School staff must anticipate excessive rainfall during the rainy season that leads to flash flooding of Pukele Stream. Due to a confluence of stream water and the main discharge point of the current Carlos Long Street drainage system (Outlet A) a few hundred feet upstream of Anuenue School, flooding regularly displaces boulders, erodes the stream banks, and breaches over the banks to inundate the agricultural terraces and gardens. As a preventative measure, Kumu Baba maintains rock *mana wai* (stream branch) to divert future fast-moving flows of water. He explains that the stream “hits us on the bend” and continually erodes the stream bank. Anticipating each storm event, Kumu Baba disconnects the intake pipe that brings water to the *loi* in order to prevent inundating the agricultural terraces and neighboring sections of the School grounds with water. During these expected events, the School’s paramount concern is the safety of the students, as flash flooding can significantly raise the level of the stream and force sections of the stream banks to collapse in mere minutes. The four School representatives express the following concerns and recommendations:

- a. Any increase in the already substantial flow of storm water runoff as a result of the proposed Carlos Long Street drainage system may overwhelm their current practices of safeguarding their agricultural terraces as well as the neighboring School grounds and their ability to protect their students who are typically in and near the stream during the rainy season.
- b. Any increase of water flow must be buffered, deflected or diffused. Yet, Kumu Baba speculates as to whether a water catchment system installed where the existing drain system enters the Stream would adequately diffuse the water that rushes into the Stream during heavy rains before it reaches the School grounds, or whether it would send even more water that is concentrated and directed alongside the School’s property and potential damage to their site. Mr. Nakoa recommends that if a catchment basin is installed where the existing system discharges into Pukele Stream, then large rocks should be scattered downstream to break up the flow of water. *He similarly suggests that the water mauka of the Carlos Long Street could be diverted with large rocks to prevent massive episodes of flooding.*
- c. The construction of the proposed project may pollute the Stream and harm its plants and animals through runoff and the operation of heavy

equipment, as well as hinder students' access to the School. In addition, a flash flood during construction may inundate the School grounds and *loi*.

#### **4.2.4 Potential Impacts**

Based on the information gathered for the cultural and historic background and community consultation in the CIA report, CSH foresees potential impacts of the proposed project on native Hawaiian or other ethnic groups' cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes, and on cultural, historic, and natural resources. CSH clarified these potential impacts and made the following recommendations.

1. Land-disturbing activities may uncover burials or other cultural resources. Although a previous archaeological survey along the project corridor did not locate any cultural sites in the project area, the close proximity of a documented burial cave to the mauka section of the project site suggests the possibility of uncovering burials. Further, LCA testimonies indicate that agricultural plots may have been located on the project area and associated cultural deposits may remain intact underground. Should historic, cultural, or burial sites or artifacts to be identified during ground disturbance, the construction contractor should immediately cease all work and notify appropriate agencies pursuant to applicable law.

2. The Project may impact sites of cultural, historical, and archaeological interests. Cultural learning activities at Anuenue School occur below the project area along the eastern bank of Pukele Stream and depend on its continual flow. In particular, the School draws Stream water through a system of pipes to irrigate their restored *loi kalo*, which have been designated a historic property (SIHP 50-80-14-6750; O'Hare et. al. 2004). In addition, community participant Mrs. Cruz previously discovered ancient terraced walls during the original restoration of these *loi kalo*, which suggests that this cultural site is important today and as a potential archaeological site. There will be about a 4" increase in the depth of the Stream at peak flow *mauka* of the existing drain system Outlet A, which is located just upstream of the *mauka* section of the School's *loi kalo*, and no increase in peak flow downstream of the existing Outlet A. The new Outlet 1 below the Pukele Stream Bridge will minimally increase the depth of the Stream peak flow by about 4" with no expected significant impacts and the water quality should not change after construction of the drainage improvements. However, storm peak flows downstream of the existing Outlet A *mauka* of the *loi kalo* will remain the same and flooding of Pukele Stream, which is unprotected, unlined and owned by the School and adjacent property owners will continue to occur during the rainy season.

If the project construction results in adverse water quality (e.g. runoff) or the project operation increases the flow of stream water, there may be adverse impacts to the *loi kalo*, as well as a nearby *imu* (open oven) and teaching area to construct rock *mana wai* located near the *loi kalo* above the Stream bank, as well as associated cultural practices. In addition the students of Anuenue School typically work in and

near the Stream during the rainy season, and may be directly harmed through construction or operation-related impacts. The construction contractor will implement best management practices to avoid or reduce impact on the *lo'i kalo* and other areas of cultural learning and avoid compromising the safety of the students. The City and SEY will brief and consult staff of Anuenue School, as well as other community members and organizations during the plans preparation phase as the design progresses. This will keep the School and community informed of any changes that could result in unanticipated adverse cultural, health, and safety concerns.

#### **4.2.5 Historical Assessment and Mitigative Measures**

Although the CIA report suggested the possibility of historic properties (i.e., burial caves, historic agricultural remnants), no such properties were observed within the project area. The project site and surrounding areas were altered by severe demographic and land-use changes during past agricultural, transportation, and residential construction activities and are now urbanized, consisting primarily of roadways and homes.

No historic properties were observed nor are any believed to be present that would be affected by the proposed project. Because no historic properties were identified at the project site, SHPD in their Chapter 6E-42 review letter of June 8, 2010, concurred that there will be “no historic properties affected” by this project. In the unlikely event that historic sites, including human burials are uncovered during routine construction activities, all work in the vicinity will stop and the SHPD will be contacted at 692-8015.

#### **4.2.6 Archaeological Assessment and Mitigative Measures**

CSH conducted an archaeological research of the project site, which included a literature research of archival sources, historic maps, Land Commission Awards and previous archaeological reports to create a history of archaeological sites that may have been recorded within the project limits. In addition, a reconnaissance was conducted to identify surface features and assess the potential for impacts to such features.

The literature research provided evidence of archaeological sites including agriculture, habitation, gathering and burial activities in the Palolo Valley area. However, these findings are located on the valley floor or away from the project site. No caves with cultural artifacts or burials were present within the project area and no subsurface testing was conducted. No archaeological features were found in the project site.

To minimize any impacts on the uncovering of potential archaeological deposits, human burials, or other archaeological significant features associated with this project, an archaeological monitoring plan may be developed during design in

consultation with the SHPD. According to HRS Section 6E-46.6, HAR Chapter 13-300, should any significant cultural deposits or human skeletal remains be encountered, work shall stop in the immediate vicinity and the archaeological monitor will contact the SHPD. The following nine guidelines may be submitted for review prior to commencement of any ground-altering activities:

1. The kind of remains that are anticipated and where in the construction area the remains are likely to be found.
2. How the remains and deposits will be documented.
3. How the expected types of remains will be treated.
4. The archaeologist conducting the monitoring has the authority to halt the construction in the immediate area of the find in order to carry out the plan.
5. A coordination meeting between the archaeologist and construction crew is scheduled so that the construction team is aware of the plan.
6. Type of laboratory work on remains that are collected.
7. A schedule of report preparation.
8. Details concerning the archiving of any collections that are made.
9. An acceptable report documenting the findings of the monitoring activities shall be submitted to the SHPD for review following completion of the proposed undertaking.

By developing an acceptable archaeological monitoring plan if required by SHPD for implementation, the proposed project will have no adverse effect on significant archaeological sites, which may potentially be within the subsurface area of the project site.

#### **4.2.7 Cultural Assessment and Mitigative Measures**

The project may have potential impact on native Hawaiian or other ethnic group cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes, and on cultural, historic, and natural resources. Traditional native Hawaiian cultural practices declined with the extensive land modification and urbanization of the Palolo area. As taro fields gave way to rice fields and, eventually urbanization, the traditional way of life for native Hawaiians was no longer possible in Palolo. CSH conducted a cultural survey and consulted with Hawaiian cultural organizations, government agencies, Anuenue School staff, and community members and found no known traditional native Hawaiian or other ethnic groups

cultural practices, from either past or present currently occurring within the Carlos Long Street Drainage Improvements project site.

Construction activities will result in temporary closure of portions of the project site. However, this will not prevent access to adjacent residences and areas. Trenching for the drainage improvements may uncover burials or other cultural resources. Although a previous archaeological survey along the project corridor did not locate any historic or cultural sites in the project area, the close proximity of a documented burial cave to the *mauka* section of the project area suggests the possibility of uncovering burials. Further, LCA testimonies indicate that agricultural plots have may have been located on the project area, and associated cultural deposits may remain intact underground. Should historic, cultural, or burial sites or artifacts be identified during construction activities, the contractor will immediately cease all work and the appropriate agencies shall be notified pursuant to applicable law. An archaeological monitoring plan may be developed in consultation with the SHPD to address mitigative measures to be implemented by the contractor as discussed above. With development of this monitoring plan if required, the project will have no significant adverse effect on historical and cultural sites. As a result, the project is not expected to have a significant impact on traditional native Hawaiian or other ethnic groups cultural practices or resources.

Downstream to the project site is Anuenue School, the Department of Education's K-12 Hawaiian Language Immersion School on Oahu. The School is located approximately 0.20 miles away on the southeast side of Pukele Stream. Taro patches exist along the banks of the Pukele Stream on the School site and are viewed as an important learning environment. The School provides Hawaiian cultural learning activities along the southeastern bank of Pukele Stream and depends on its continual flow. The School staff expressed concern about the increase in Pukele Stream flow and the possible adverse impacts to the taro patches as well as a nearby *imu* (earth oven) and teaching area to construct rock *mana wai*, and associated cultural practices. The environmental impacts of the Carlos Long Street Drainage Improvements project on Hawaiian cultural and educational activities of the downstream Anuenue School are discussed in **Subsection 4.6.2 Educational Facilities** of this document.

### **4.3 FLORA, FAUNA AND SIGNIFICANT HABITATS**

The proposed project is located within urbanized residential areas of Honolulu and in City road rights-of-way except for Outlet 1 at privately owned unimproved Pukele Stream. Vegetation is composed mostly of introduced plant species (guava, Christmas berry, California grass, Hilo grass, rice grass, *kiawe* (Algaroba), klu, lantana, koa haole, finger grass, and Bermuda grass). No native plants occur on the site or along Pukele Stream. No threatened and endangered species or species of concern occur on the site. This is not surprising, as most of the original vegetation in the urban areas in the Hawaiian Islands has been radically altered by human occupation and the introduction of alien plants and animals, especially on the island

of Oahu. The proposed project is not expected to have a significant adverse impact on the botanical resources.

The introduced grasses, shrubs, and trees which prevail in the area provide some degree of habitat for the typical array of exotic birds and mammals that one would expect at this urban area on the Leeward slopes of Honolulu and in this type of environment throughout the island. The U.S. Fish and Wildlife Service data indicates the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) and endangered Oahu elepaio (*Chasiempis sandwichensis ibidis*) may be located in the vicinity of the proposed project site. There is no designated critical habitat within or adjacent to the project site. No native birds, bat, elepaio or habitat were found at the project site or along Pukele Stream. The proposed drainage improvements will have no adverse impact on any native wildlife species or their habitat.

The City road rights-of-way roadside are landscaped with grasses and trees found typically in residential areas of Oahu. No candidate endangered or threatened plant or animal species are known to exist along the roadside or use the roadside as habitat. Although portions of the sidewalk area may be used by the contractor for work-related activities such as equipment and materials storage, etc., the impact caused by construction related activities on flora and fauna will be minimal. No existing plants will be removed; and any plants, grassed area, and surface improvement damaged by construction will be restored by the contractor to the original or better condition. The proposed construction of the drainage improvements is expected to have no significant impact on flora and fauna resources and on any native habitat on the site or along Pukele Stream.

#### **4.4 ECONOMIC, FISCAL AND SOCIAL FACTORS**

This section discusses the project's probable impact on economic, fiscal and social factors. Due to the nature of improvements proposed for the Carlos Long Street Drainage Improvements project impacts will be associated with construction and social related issues.

##### **4.4.1 Economic and Fiscal Factors**

Construction of the Carlos Long Street Drainage Improvements project is anticipated to commence in spring of 2012 and should be complete in one year. The preliminary estimated construction cost for the project is approximately \$4,300,000. The construction project will create construction jobs over the anticipated construction period.

Construction jobs will typically consist of on-site laborers, tradesmen, equipment operators, and supervisors among other positions. This work force will generate personal income for all workers involved. Personal income is defined as the wages paid to the direct construction workers or operational employees associated with a development. Direct construction jobs created will also stimulate indirect and induce employment within other industries on Oahu.

Fiscal impacts associated with this project will primarily involve slightly additional tax revenue generated to the State. Tax revenue sources for State government will be composed primarily of general excise taxes (GET) on development costs and construction materials, and corporate income tax. In addition, GET taxes on indirect and induced income spent stimulated by the spending of direct income will also contribute new revenues to the State. The approximately \$4,300,000 expended for the Carlos Long Street Drainage Improvements construction activities will therefore generate some increased tax revenue to the State.

Since City revenue is primarily limited to property tax revenues, there will be minimal changes to the City revenues. The improvements planned for the proposed project will contribute to property value of the surrounding areas. This increase is expected to be minimal. No changes to the property values or existing surrounding residences are anticipated from the construction of the project. The project will not generate any new in-migrant residents to the island of Oahu. Thus, there will not be any effect on State and County operational expenditures for public services.

#### **4.4.2 Social Factors**

The drainage improvements planned for the project are not expected to change the existing resident population in Palolo, Oahu. There are no new residential units or visitor units associated with this project. Thus, the project should result in no in-migration of individuals to reside within the City. As a result, there should be no impact on the existing resident population.

Due to the nature of the proposed improvements, the project will improve the performance of the existing City drainage system. The overflow conditions at each manhole, catch basin, and grated inlet throughout the system for a 10-year storm event will be eliminated. This project will not change the existing land uses in the surrounding area or have a significant impact on the urbanized land uses.

The project is a City initiated project that will take proactive measures to address and mitigate public safety concerns of citizens residing along the existing drainage system. The planning of the project incorporated these concerns to mitigate the potential of overflow and flooding. The proposed project will improve the overall safety of citizens in proximity to the existing drainage system, and will also reduce the existing potential flooding hazards.

#### **4.5 INFRASTRUCTURE FACILITIES**

This section discusses the projects probable impacts on infrastructure facilities serving the project site and surrounding areas. Due to the nature of drainage improvements proposed for the project, most of the impacts will be associated with short-term construction-related activities.

#### 4.5.1 Water Facilities

Water service in the vicinity of the Carlos Long Street Drainage Improvements project site is provided by the BWS Palolo 405' and 605' systems, which is part of an integrated system of storage reservoirs and distribution lines. The new drainage system improvements are located in City road rights-of-way except for a portion in the BWS 405' 0.5 MG Reservoir site TMK: 3-4-24:44 and the Outlet 1 at Pukele Stream which is located in three private properties TMK 3-4-05:64 and 65 and TMK 3-4-04:01.

The proposed drainage improvements are anticipated to require adjustments to existing 8" and 4" water lines along Carlos Long Street at the intersection of Jasmine Street and Narcissus Street, respectively. No other adverse impacts on the existing Palolo 405' and 605' systems or facilities are anticipated. During design and construction phases of the proposed project, close coordination will be maintained with BWS to ensure that their water system will not be adversely impacted and that water service to adjacent areas will not be interrupted. Construction plans will be submitted to BWS for review. Construction schedule will be coordinated with BWS to minimize impact to their water system.

#### 4.5.2 Wastewater Facilities

The proposed Carlos Long Street Drainage Improvements project is intended to eliminate storm runoff of a 10-year storm event from overflowing existing manholes, catch basins, and grated inlets throughout the system. The project will not require changes or alterations to nor have any impacts on the existing wastewater facilities at or adjacent to the project site, except for demolition of portion of an 8" abandoned sewer line on Palolo Avenue and supporting an existing sewer manhole at the intersection of Carlos Long Street and Myrtle Street during construction of the box drain. During design and construction phases of the proposed project, close coordination will be maintained with City to ensure that the wastewater system will not be adversely impacted and that sewer service to adjacent areas will not be interrupted.

#### 4.5.3 Drainage Facilities

The existing City drainage system in the Carlos Long Street residential area is discussed in **Subsection 2.2.3 Existing Drainage System** and is shown on **Figure 1-2**. The proposed new Hillside Drain System and Subdivision Drain System modification to Drain Line A as proposed in the *SEY Report* are discussed in **Subsections 2.4.2.1 Hillside Drain System** and **2.4.2.2 Subdivision Drain System** are discussed in **Subsections 2.4.2.1 Hillside Drain System** and **2.4.2.2 Subdivision Drain System** of this document, and shown on **Figures 2-4** and **2-5**. The drainage improvements will eliminate the overflow of each manhole, catch basin, and grated inlet throughout the system.

The new Hillside Drain System will introduce a new Outlet 1 at Pukele Stream south of the Pukele Stream Bridge in waters of the U.S. See **Figure 2-4**. Pukele Stream is an unimproved stream in upper Palolo Valley and is owned by the adjacent property owners. An increase in peak stream flow will occur between Outlet 1 and Outlet A as a result of this new Outlet 1. The *SEY Report* estimated the increase in flow of about 300 cfs and in water level of about 0.33 feet in Pukele stream caused by this additional peak flow. The drainage system improvements will have no adverse impact on the existing drain system and no significant impact on Pukele Stream and to Anuenue School downstream of the improvements. See **Subsection 4.6.2 Educational Facilities** of this document.

#### **4.5.4 Solid Waste Facilities**

The City Department of Environmental Services provides solid waste collection in the surrounding residential areas of the project site. Solid waste is transported to the Campbell Industrial Park H-Power energy recovery incinerator and the City's Waimanalo Sanitary Landfill.

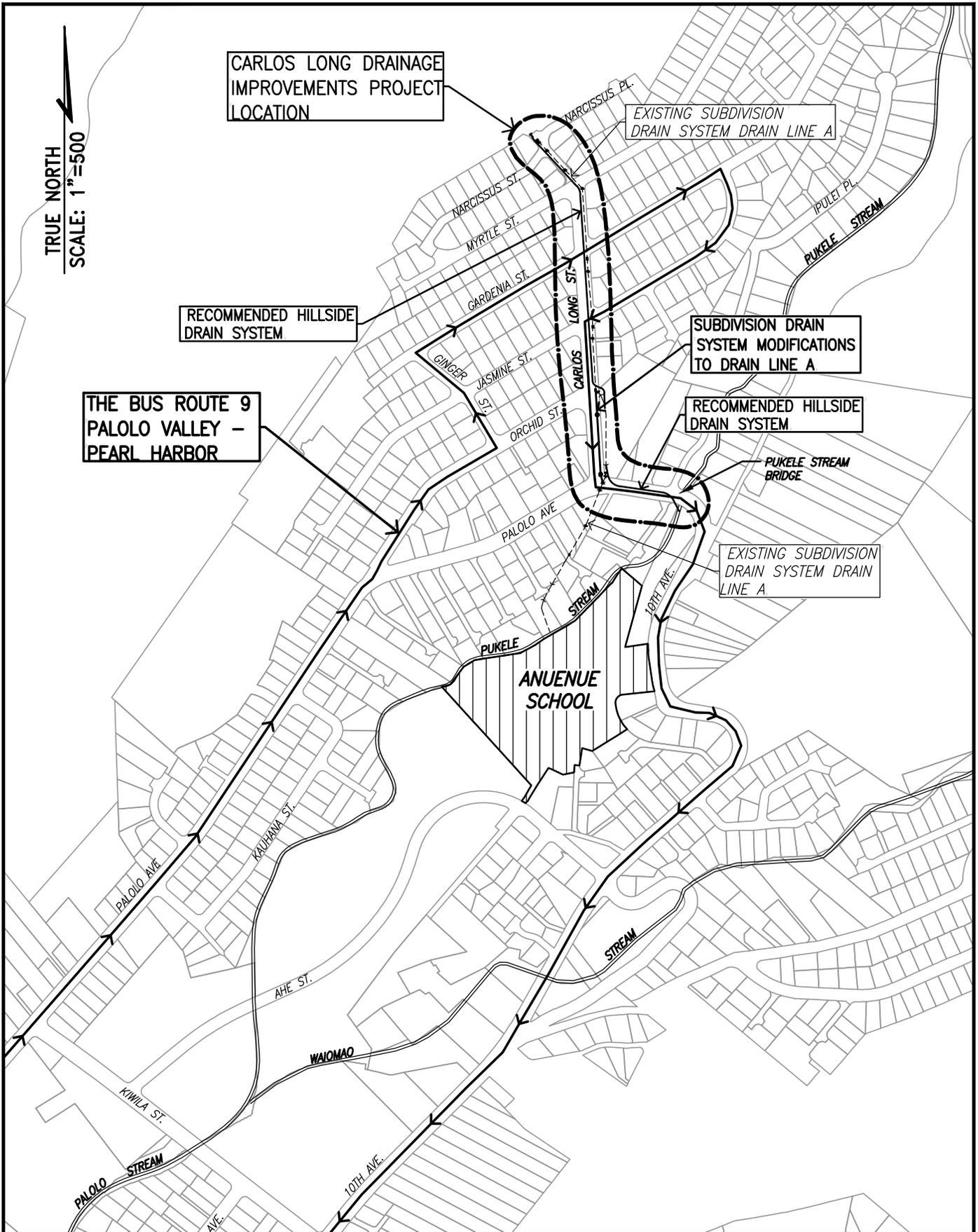
The project will generate some solid waste typical from the clearing and construction activities of the project. Construction-related solid wastes generated will have only a short-term impact and the Contractor will be required to properly dispose of all debris generated from construction in conformance with City and State regulations.

#### **4.5.5 Transportation Facilities**

Palolo Avenue and 10<sup>th</sup> Avenue provide the major vehicular access to the Carlos Long Street Drainage Improvement project site. They form a loop for traffic into and out of Palolo Valley. Heavier traffic volumes occur during peak travel periods such as weekday mornings and afternoons along these streets. Low traffic volumes generally occur in this area during the non-peak hours. Traffic within the immediate vicinity of the Carlos Long Street site is mostly limited to local residents of Orchid, Jasmine, Gardenia, Magnolia, and Narcissus Streets.

Vehicular and pedestrian traffic on and adjacent to the drainage improvement alignment on Palolo Avenue and Carlos Long Street will be adversely impacted on the short-term by construction activities and the presence and movement of construction equipment. These City streets will experience periodic disruptions to traffic flow like lane closures and street parking will be restricted.

The Bus Route 9 Palolo Valley-Pearl Harbor is located in the project area. Route 9 proceeds north on Palolo Avenue, west on Ginger Street, north on Gardenia Street, east and south on Jasmine Street, southeast on Carlos Long Street, and east on Palolo Avenue through the project area as shown on **Figure 4-2**. Construction of the drainage improvements will impact on Bus Route 9, bus stops, and paratransit operations.



TRUE NORTH  
SCALE: 1"=500

CARLOS LONG DRAINAGE IMPROVEMENTS PROJECT LOCATION

EXISTING SUBDIVISION DRAIN SYSTEM DRAIN LINE A

RECOMMENDED HILLSIDE DRAIN SYSTEM

SUBDIVISION DRAIN SYSTEM MODIFICATIONS TO DRAIN LINE A

THE BUS ROUTE 9 PALOLO VALLEY - PEARL HARBOR

RECOMMENDED HILLSIDE DRAIN SYSTEM

PUKELE STREAM BRIDGE

EXISTING SUBDIVISION DRAIN SYSTEM DRAIN LINE A

ANUENUE SCHOOL

PREPARED FOR:  
DEPARTMENT OF DESIGN AND CONSTRUCTION  
CITY AND COUNTY OF HONOLULU

**J&E** Shimabukuro, Endo & Yoshizaki, Inc.  
Civil & Structural Engineers

CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
HONOLULU, OAHU, HAWAII  
**THE BUS ROUTE 9 & ANUENUE SCHOOL**

FIGURE  
**4-2**

Hawaiian Electric Company's (HECO) Pukele 138kv Switching Station is located at the north end of Myrtle Street and is accessed from Carlos Long Street and Myrtle Street. BWS 405' 0.5 MG Reservoir site is located on the north side of Carlos Long Street and is accessed from Carlos Long Street. Construction of the drainage improvements will impact on HECO access to the Switching Station and BWS access to the Reservoir site.

To mitigate short-term construction impacts, traffic control plans (TCP) and specifications will be prepared by a licensed professional engineer for each phase of work to minimize disruptions to normal vehicular and pedestrian traffic by construction activities. The TCP will be required to comply with all rules, regulations, and instructions of the City to mitigate traffic impacts. The TCP will be submitted to and approved by the City for street usage permit and implemented by the Contractor during construction. Appropriate signs and barriers will be erected and at least one lane will remain open during workday hours of 8:30 a.m. to 3:30 p.m. There will be no traffic detours. After working hours, trenches will be covered with a non-skid bridging material, and all lanes will be opened to traffic. Off-duty police officers may be required for traffic control. Driveways will be kept open. Provisions for pedestrian traffic will be provided to allow safe continuous passage around any closed walkways.

Construction notes will include a paragraph that will require the contractor to notify the Department of Transportation Services (DTS), Public Transit Division at 768-8396; Oahu Transit Services, Inc. bus operations at 848-4578 or 848-6016 and paratransit operations at 454-5041 or 454-5020; HECO Construction and Maintenance Department, Customer and System Superintendent at 543-4223; and BWS Plant Operations at 748-5800 of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project at least two weeks prior to construction. Construction notes will also require the contractor to phase construction work only to the extent that can be completed during a day and shall be done during off-peak hours of 8:30 AM to 3:00 PM to minimize the impact on the surrounding neighborhood. TCP shall be prepared for each phase of work and submitted to DTS for approval.

At least two (2) weeks prior to commencement of construction, all affected residents, Anuenue School, and the Palolo Neighborhood Board (NB) No. 6 will be notified and kept apprised of the nature of work, construction schedule, lane closures, expected length of time of inconveniences, any restrictions which may be imposed to complete the work, and the Contractor's phone number to be called to report traffic concerns.

Construction of the drainage improvements on Carlos Long Street and Palolo Avenue will have short-term and temporary impacts to vehicular and pedestrian traffic due to the movement of slow-moving, heavy construction vehicles and equipment. Completion of the proposed drainage improvements action is not expected to generate long-term traffic impacts.

## 4.6 PUBLIC FACILITIES AND UTILITIES

This section discusses the Carlos Long Street Drainage Improvements project's probable impact on public facilities and utilities serving the project site and surrounding area. Due to the nature of improvements proposed for the drainage improvements, impacts will primarily be temporary and associated with construction-related activities.

### 4.6.1 Electrical and Communication Facilities

Construction of the drainage improvements is not expected to have significant impact on HECO's existing electrical facilities and its ability to provide electricity. Short-term impact on the access to HECO's 138kv Switching Station is discussed in **Subsection 4.4.5 Transportation Facilities**. In addition, Hawaiian Telcom's existing telecommunication facilities and Oceanic Time Warner Cable's existing cable television facilities will not be affected by this project. Appropriate coordination with these utility companies will be conducted during the design and construction to minimize disruptions to their services or activities.

### 4.6.2 Educational Facilities

Anuenue School is the only school located near the proximity of the project site and is approximately 0.20 miles away on the southeast side of Pukele Stream. See **Figure 4-2**. Storm runoff from the project drainage improvements will be collected and conveyed to Pukele Stream as discussed in **Subsection 2.4.2 Separate Box Drain System** of this document. The drainage improvements will be designed in accordance with the *Rules Relating to Storm Drainage Standards* and will not have significant additional impact on the School during extreme inclement weather. A potential impact on Anuenue School would be associated with short-term construction noise. However, since the School is 0.20 miles south of the project area and is partitioned by residences, the construction noise is not anticipated to increase the ambient noise existing at the School campus.

Anuenue School is the Department of Education's K-12 Hawaiian Language Immersion School on Oahu. As discussed in **Subsection 4.2.3 Results of Community Consultation**, Anuenue School staff has expressed concerns that any increase in Stream flow in the upper portion of the Stream above the School and below the Pukele Stream Bridge at Outlet 1 by the drainage improvements project will directly impact the School and may overwhelm the sustainability of their current indigenous cultural and educational practices. The project will impact the safeguarding of their agricultural terraces as well as the neighboring School grounds including the physical facilities along the Pukele Stream, which consists of a portable classroom, a portable restroom, aquaculture tanks, and a work and storage building. Taro patches exist above the bank of the Pukele Stream and are viewed as an important cultural learning environment. Protecting the taro patches is deemed as a major concern by the School staff. Their ability to provide for the safety of teachers

and students who study and work in the taro patches and Pukele Stream needs to be protected.

Proposed new Outlet 1 south of the Pukele Steam Bridge will cause an increase in peak (maximum) flow from Outlet 1 to Outlet A of about 300 cfs from its existing peak flow of 3,300 cfs to its future peak flow of 3,600 cfs, and an increase in depth of stream peak flow of about 4" as noted in **Subsection 2.4.2.3 Pukele Stream Flows** of this document. Regarding School physical facilities and its personnel, the increase in peak flow of 300 cfs and depth of flow of 4" should not cause any damage to School physical facilities and injury to its personnel, since the physical facilities are located above the 4" increase in depth of Pukele Stream peak flow.

Palolo Valley has experienced excessive and torrential rainfall during the rainy season that has led to flash flooding of Pukele Stream which is unimproved, unlined, under capacity and owned by the School and adjacent property owners. Flooding regularly breaches over the Stream banks to inundate the school agricultural terraces and gardens as well as a nearby *imu*. The increase in depth of Pukele Stream peak flow upstream of existing Outlet A to new Outlet 1 from an average of 8.00' to 8.33' should not cause a significant increase in long-term flooding and erosion to Pukele Stream, Anuenue School and adjacent properties since rainy season flash flooding has regularly occurred at the sites and since the Stream is unimproved, unlined, and under capacity.

Peak flow from Outlet A, the main discharge point of the current Carlos Long Street drainage system, will decrease about 300 cfs from its existing peak flow due to the proposed new Outlet 1. This decrease in peak flow will likely decrease the flooding on the School side bank that regularly displaces boulders, erodes the stream banks, and breaches over the banks to inundate the agricultural terraces. Below existing Outlet A, the peak flow is 3,750 cfs and remains the same for both the existing and future conditions. Thus, there will be no change in existing and future flooding and erosion conditions downstream of Outlet A.

Taro patches are located near and downstream of existing Outlet A. A rock wall 4' to 5' high has been constructed along the School side bank adjacent to Pukele Stream downstream of existing Outlet A. A rock landing exists adjacent to the rock wall and rises 1' to 2' towards the taro patches. Taro patches are about 3' to 4' above the top of rock landing. During and after severe storms, water rises to 1±' above the rock wall onto the rock landing. The increase in depth of flow of the Stream from the proposed new Hillside Drain System at Outlet 1 to existing Outlet A due to added storm peak flow is about 4" and will have no impact on the flow and depth of the Stream downstream of Outlet A since there will be no change in peak flow and depth downstream of Outlet A. Thus, there should be no new impacts on the taro patches created by the new drainage improvement project.

Proposed new Outlet 1 flows will erode the far side Pukele Stream bank. During the plans preparation phase, energy dissipators and lining of the far side bank at

Outlet 1 will be considered to buffer, deflect and diffuse storm flow and to mitigate erosion of the far side bank. Large rocks will not be scattered downstream of Outlet 1 to break up the flow of Pukele Stream as recommended by the Anuenue School staff. The Stream is unimproved, unlined and under capacity and large rocks placed downstream will spread the flow over a wider area and cause increased flooding and erosion to the banks and properties adjacent to the Stream. Also, storm flows mauka of Carlos Long Street will not be diverted with large rocks to prevent massive episodes of flooding as recommended by the School staff since diversion ditches were constructed on the hillside in 2000 to reduce the potential for flooding.

To mitigate the existing flooding and erosion in anticipation of each storm event, the Anuenue School staff should continue to disconnect the intake pipe that brings water to the taro patches in order to prevent inundating the agricultural terraces and neighboring sections of the school grounds with water. Also, the School and adjacent property owners of Pukele Stream may consider constructing or requesting a government agency to construct flood control improvements to the unimproved and unprotected Stream crossing their properties. Construction of flood control improvements along the unimproved Pukele Stream for the owners is not in the scope of work of the Carlos Long Street Drainage Improvements project. Also, to safeguard School property and personnel, the School should not construct future improvements in flood prone areas and should keep students and practitioners of indigenous cultural and educational practices, including the restorers and workers of the taro patches, away from the flood prone areas during periods of excessive rainfall.

The Anuenue School staff has also expressed concern that the construction of the drainage improvements project may pollute Pukele Stream and harm its plants and animals through runoff and operation of heavy equipment as well as hinder students' access to the School.

Construction operations may result in short-term impacts on Pukele, Waiomao and Palolo Streams, Ala Wai Canal and the coastal receiving waters. It is expected that the construction activities such as trenching may result in localized silt runoff during construction that has a potential to enter streams, canal, and coastal waters and have some minor short-term impacts on water quality. However, best management practices (BMP) as discussed in **Subsection 4.1.2.3 Probable Construction Impacts and Mitigative Measures** of this document will be incorporated into design plans and will be implemented by the contractor during construction to minimize the short-term potential impacts of silt runoff and pollution on streams, canal, and coastal waters and any harm to its plants and animals.

In addition, plans will be reviewed by pertinent government agencies for comments and approval prior to construction. Storm water discharge associated with construction activities will require coverage under the NPDES Permit system. Therefore, impacts on streams, canal, and coastal waters water quality will be

minimal or minor and short-term because the contractor will employ approved measures to prevent silt runoff from construction areas along with complying with other permits. Water quality is not anticipated to change in Waiomao and Palolo Stream, Ala Wai Canal, and coastal receiving waters due to construction of the project.

Vehicular and pedestrian traffic on and adjacent to the drainage improvements alignment on Palolo Avenue and Carlos Long Street will be adversely impacted on the short-term by construction activities and the presence and movement of construction equipment. These City streets will experience periodic traffic flow disruptions, bike lane and walkway closures, and street parking restrictions.

To mitigate short-term construction impacts, traffic control plans (TCP) and specifications will be prepared by a licensed professional engineer for each phase of work to minimize disruptions to normal vehicular and pedestrian traffic by construction activities as discussed in **Subsection 4.4.5 Transportation Facilities** of this document. The TCP will be required to comply with all rules, regulations, and instructions of the City to mitigate traffic impacts. The TCP will be submitted to and approved by the City for street usage permit and implemented by the Contractor during construction. Driveways will be kept open. Provisions for pedestrian traffic will be provided to allow safe and continuous passage around any closed walkways and access to Anuenue School.

Construction of the drainage improvements on Carlos Long Street and Palolo Avenue will have short-term and temporary impacts to vehicular and pedestrian traffic due to the movement of slow-moving, heavy construction vehicles and equipment. Completion of the proposed drainage improvements is not expected to generate long-term traffic impacts and hinder students' access to Anuenue School.

#### **4.6.3 Police and Fire Protection Facilities**

Construction of the project is expected to have no significant and only minimal and minor short-term impact on the police and fire department operations. However, such impacts are not expected to affect the mobility to provide adequate protection services to the upper Palolo Valley community.

Police staff may be needed to assist in directing traffic during construction activities. There is the possibility of some complaints to the Honolulu Police Department (HPD) from residents over dust and noise from construction activities. However, the Contractor will be required to comply with applicable regulations and permit conditions governing construction activities to minimize disruptions to nearby residents. Best management practices will also be implemented to minimize dust, erosion, and other nuisances from short-term construction activities. The project will have minimal impact on the mobility of HPD to provide protective services in the project area.

Fire apparatus access will be provided throughout the construction site for all phases of this project. Access to fire hydrants will be maintained. The Fire Communication Center at 523-4411 will be notified by the contractor of any interruption to the existing fire hydrant system during construction activities. The project will have minimal impact on the Honolulu Fire Department (HFD) operations or mobility to provide protective services. In addition, appropriate coordination will be performed during the design of this project, which will include submitting construction plans for HPD review.

#### **4.6.4 Public Facilities**

Public facilities located in the vicinity of the project site include the BWS 0.5 MG Reservoir and Anuenue School.

Construction activities associated with this project are not expected to result in a significant impact on these public facilities nor severely disrupt existing public activities from occurring. Construction will not involve the use of these facilities or impede existing activities conducted there. Short-term impact on the BWS 0.5 MG Reservoir site is discussed in **Subsection 4.5.1 Water Facilities** and on Anuenue School is discussed in **Subsection 4.6.2 Educational Facilities** of this document. Design of the project will include developing appropriate erosion control plans and BMP to minimize silt from construction and debris falling onto adjacent properties. Such plans developed will be reviewed and approval by appropriate government agencies. Therefore, implementation of such plans will provide sufficient measure to minimize impacts on these public facilities.

#### **4.6.5 Healthcare Facilities**

The Palolo Chinese Home is located approximately 0.25 miles east of the project site. Construction activity will not involve the use of this facility. Construction is not anticipated to have adverse effects on the operations or mobility of the elder care facility to provide elder care services. Consequently, short-term construction activities associated with the project will have no impact on healthcare facilities or activities.

## **CHAPTER 5 CONFORMANCE WITH PLANS AND POLICIES**

This chapter discusses the project's conformance with the State Land Use District regulations and pertinent objectives and policies of the City's General Plan, City's Development Plan Land Use, and City Zoning Districts.

### **5.1 STATE LAND USE DISTRICT**

The Carlos Long Street Drainage Improvements project parcels and surrounding residential areas are classified as Urban on the State's Land Use District Boundary Map. See **Figure 5-1**. Urban District permits activities or uses as provided by ordinances or regulations of the county within which the Urban District is situated. Thus, the Carlos Long Street Drainage Improvements parcels and the surrounding residential areas are regulated by the ordinances and regulations of the City.

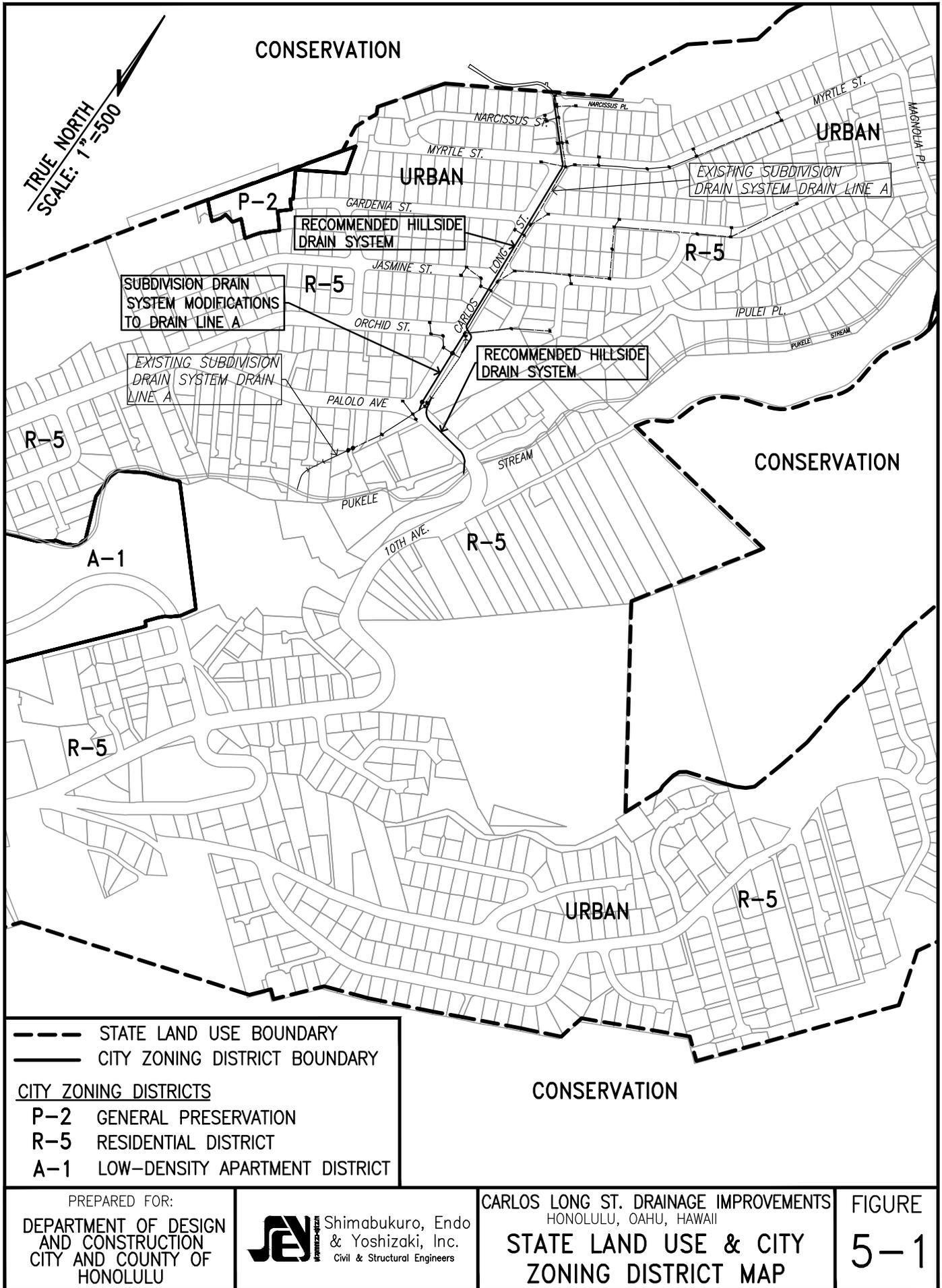
### **5.2 CITY GENERAL PLAN**

This project will conform to and be consistent with applicable objectives and policies described under the City's General Plan. The City's General Plan is a statement of long-range, social, economic, environmental, and design objectives for the general welfare and prosperity of the people of Oahu. It includes statements of both broad policies that facilitate the attainment of the objectives of the General Plan and controls and distributes anticipated population growth to avoid social, economic, and environmental disruptions and to allow people to live and work in harmony. Safe, efficient, and environmentally sensitive drainage system facilities must be provided to meet the needs of the people of Oahu. The General Plan requires that such need be met with careful consideration of the social, economic, and environmental consequences.

The Carlos Long Street Drainage Improvements project will carefully consider social, economic, and environmental consequences and will be in compliance with statements and policies in the City's General Plan. The project will be consistent with the objectives and policies of the General Plan.

### **5.3 PRIMARY URBAN CENTER DEVELOPMENT PLAN**

The Carlos Long Street Drainage Improvements parcels and the surrounding residential properties fall under the City's Primary Urban Center Development Plan. The parcels and surrounding areas are identified as Lower-Density Residential under the Plan's Land Use Map PUC-East. The Land Use Map PUC-East presents a vision for future development in this area consisting of policies, guidelines, and conceptual schemes that will serve as a policy guide for more detailed zoning districts, maps and regulations.



---	STATE LAND USE BOUNDARY
—	CITY ZONING DISTRICT BOUNDARY
<b>CITY ZONING DISTRICTS</b>	
P-2	GENERAL PRESERVATION
R-5	RESIDENTIAL DISTRICT
A-1	LOW-DENSITY APARTMENT DISTRICT

PREPARED FOR:  
 DEPARTMENT OF DESIGN  
 AND CONSTRUCTION  
 CITY AND COUNTY OF  
 HONOLULU

**J&E** Shimabukuro, Endo  
 & Yoshizaki, Inc.  
 Civil & Structural Engineers

CARLOS LONG ST. DRAINAGE IMPROVEMENTS  
 HONOLULU, OAHU, HAWAII  
**STATE LAND USE & CITY  
 ZONING DISTRICT MAP**

FIGURE  
**5-1**

The Carlos Long Street Drainage Improvements project will be consistent with applicable policies and objectives of the Land Use Map PUC-East.

#### **5.4 CITY ZONING DISTRICTS**

The Carlos Long Street Drainage Improvements parcels along with the surrounding residential properties are zoned R-5 Residential according to the City's zoning district maps. See **Figure 5-1**. This is in conformance with the PUC-East Development Plan. The City Land Use Ordinance (LUO) permits the use of these zoned lands for public facilities such as drainage systems. The proposed action will be in compliance with the policies and objectives of the City Zoning Districts regulations.

#### **5.5 SPECIAL DESIGNATION DISTRICTS**

A review of the City's special designation districts maps for the Carlos Long Street Drainage Improvements parcels and immediate surrounding area determined that they are outside of the flood hazard district, special districts and special management areas (SMA). As a result, the Carlos Long Street Drainage Improvements are not subject to regulatory procedures, permit requirements, and review under the City's LUO and SMA regulations described in Chapter 25 of the Revised Ordinances of Honolulu.

## CHAPTER 6 AGENCIES AND PUBLIC CONSULTATION

### 6.1 PRE-ASSESSMENT CONSULTATION

Prior to preparing the Draft EA, pre-assessment consultation with various Federal, State and County government agencies, community organizations, and property owners adjacent to the project site was conducted to obtain their comments and concerns associated with the Carlos Long Street Drainage Improvements project. Letters providing project information along with schematic plans were sent for their review. Copies of response letters were received from parties marked below with a check mark (✓) and are included in **Appendix B**. Response letters noted with no comments or objections from parties are marked below with an asterisk (\*). Comments received were incorporated into the Draft EA as appropriate.

#### **Federal Government Agencies**

U.S. Army Corps of Engineers, Honolulu, District Regulatory Branch ✓  
U.S. Fish and Wildlife Service, Pacific Islands Office ✓

#### **State of Hawaii Agencies**

Department of Business & Economic Development & Tourism, Land Use  
Commission  
Department of Education ✓  
Department of Land & Natural Resources  
Engineering Division ✓  
Commission on Water Resource Management ✓  
Division of Forestry & Wildlife ✓\*  
Division of Aquatic Resources  
Historic Preservation Division ✓\*  
Land Division – Oahu District, TMK: 3-4-24:43, 3-4-05:01, 3-4-04:01,  
3-4-12:24 ✓  
Department of Health  
Environmental Planning Office  
Clean Water Branch ✓  
Department of Transportation ✓  
Office of Hawaiian Affairs

#### **City & County of Honolulu Agencies**

Board of Water Supply, TMK 3-40-20:03, 3-4-24, 43 & 44 ✓  
Department of Design & Construction ✓\*  
Department of Environmental Services

Department of Facility Maintenance  
TMK: 3-4-12:23 ✓\*  
Division of Road Maintenance ✓  
Department of Parks & Recreation ✓  
Department of Planning & Permitting ✓  
Department of Transportation Services ✓  
Honolulu Fire Department ✓\*  
Honolulu Police Department ✓

### **Community Organizations**

Anuenue School ✓  
Palolo Neighborhood Board No. 6

### **Property Owners and/or Lessees on or Adjacent to Project Site**

3152 Carlos Long Street, TMK: 3-4:25:66  
3170 Carlos Long Street, TMK: 3-4-25:09  
3178 Carlos Long Street, TMK: 3-4-24:68 & 3-4-25:10  
3204 Carlos Long Street, TMK: 3-4-24:67  
3215 Carlos Long Street, TMK: 3-4-11:108  
3230 Carlos Long Street, TMK: 3-4-24:47  
3234 Carlos Long Street, TMK: 3-4-24:42  
3236 Carlos Long Street, TMK: 3-4-24:46  
3244 Carlos Long Street, TMK: 3-4-24:45  
3245 Carlos Long Street, TMK: 3-4-11:121  
3271 Carlos Long Street, TMK: 3-4-11:124

2463 Gardenia Street, TMK: 3-4-11:97  
2468 Gardenia Street, TMK: 3-4-11:96

2443 Jasmine Street, TMK: 3-4-11:109  
2508 Jasmine Street, TMK 3-4-24:48

2469 Myrtle Street, TMK: 3-4-25:10 ✓  
2470 Myrtle Street, TMK: 3-4-25:35  
2502 Myrtle Street, TMK: 3-4-25:36

2481 Narcissus Street, TMK: 3-4-25:67  
2482 Narcissus Street, TMK: 3-4-25:68  
2507 Narcissus Street, TMK: 3-4-25:65

2429 Orchid Street, TMK: 3-4-11:122

2389 Palolo Avenue, TMK: 3-4-05:04  
2413 Palolo Avenue, TMK: 3-4-05:01

2414 Palolo Avenue, TMK: 3-4-12:24  
2422 Palolo Avenue, TMK: 3-4-12:35  
2427 Palolo Avenue, TMK: 3-4-05:64, 65

2546 10<sup>th</sup> Avenue, TMK: 3-4-04:01  
2585 10<sup>th</sup> Avenue, TMK: 3-4-12:21

## CHAPTER 7 FINDINGS AND ANTICIPATED DETERMINATION

To determine whether a proposed action may have a significant effect on the environment, the Approving Agency needs to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The Approving Agency's review and evaluation of the proposed actions effect on the environment will result in a determination whether 1) the action will have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action will not have a significant effect warranting a Finding of No Significant Impact.

This chapter discusses the findings of the environmental assessment conducted of the proposed Carlos Long Street Drainage Improvements project, in relation to the 13 Significance Criteria prescribed under the State Department of Health's Administrative Rules Title 11, Chapter 200. The purpose of this assessment is to consider the "significance" of potential environmental effects which includes the sum of effects on the quality of the environment along with the overall and cumulative effects. The findings are discussed below for each criterion.

### 7.1 FINDINGS

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.*

The proposed project will not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. As discussed in **Chapter 4 Affected Environment and Environmental Consequences** of this document, the proposed drainage improvements are intended to reduce the potential of overflow conditions at each manhole, catch basin, and grated inlet throughout the existing Carlos Long Street drainage system from a 10-year storm event. Such improvements will occur on already urbanized areas altered by past agricultural, transportation, and residential construction activities. Thus, there will be no destruction or loss of any significant, endangered, or threatened botanical, faunal, geological, or other natural resource.

There are no known cultural resource nor traditional native Hawaiian or other ethnic groups cultural practices occurring at the Carlos Long Street, Palolo Avenue, and Pukele Stream project area. There is no documented evidence from archaeological surveys, historical records or oral traditions of burials, burial caves or ancestral remains within the project area. While recollections of Palolo Valley *kamaaina* concerning storied places and associated tales and oral traditions reveal a strong connection to past traditions and a renewed salience of those traditions today, these significant cultural places and artifacts are not located in the project area. Thus, the

proposed drainage improvements are not expected to have any impact on cultural resource or traditional cultural practices within the project area.

The proposed project may impact sites of cultural, historical, and archaeological interest of Anuenue School located 0.20 miles south of the project area. The School's *loi kalo* has been designated a historic property. Previously discovered nearby ancient terraced walls of *loi kalo* on the grounds of the School suggests that this cultural site is important today as a potential archaeological site. Cultural and educational practices are associated with the *loi kalo* and an *imu* and teaching area to construct rock *mana wai* nearby.

The proposed project's impact on Anuenue School and its cultural educational practices are discussed in **Subsection 4.6.2 Educational Facilities** of this document. The proposed drainage improvements are not expected to have any significant impact on cultural resources or traditional cultural practices of Anuenue School. In the unlikely event should historic, cultural, or burial sites or artifacts be discovered during the course of the project's construction, all work in the immediate area will cease and the State Historic Preservation Division will be notified promptly.

The proposed project will not result in the irrevocable commitment to loss or destruction of any historical or traditional native Hawaiian or other ethnic groups' cultural practices or resource which may be within the project area and at the downstream Anuenue School site.

2. *Curtails the range of beneficial uses of the environment.*

The proposed project will not curtail the range of beneficial uses of the surrounding environment. The existing residential parcels have been developed over 60 years ago. The proposed project will not change the existing residential use of such parcels. Existing surrounding residential use will remain as existing. The proposed improvements to the existing Carlos Long Street, Palolo Avenue, Pukele Stream and adjacent properties will not limit or significantly impact these uses or the surrounding environment.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.*

The proposed project will not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders. This Draft EA addresses the probable environmental impacts associated with the project's drainage improvements, which will be primarily associated with short-term construction activities. The project will be consistent in conserving natural and cultural resources in the area and in enhancing the long-term quality of life for residents adjacent and surrounding the project area by reducing the potential of

overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drain system from a 10-year storm event.

4. *Substantially affects the economic or social welfare of the community or State.*

As discussed under **Chapter 4** of this document, the proposed project will not have any significant negative impacts on the economic structure of the Palolo area or the social welfare of the Palolo community. The project will create a short-term minor economic benefit generating construction jobs and personal income. The proposed project is limited to the Carlos Long Street, Palolo Avenue, Pukele Stream and adjacent properties. As a result, there will be no negative impact or change to the overall character of the Palolo community or the State.

5. *Substantially affects public health.*

The proposed project is not expected to substantially affect public health since it will involve drainage improvements which will improve public health and safety by minimizing potential of overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drain system from a 10-year storm event.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities.*

The project will not have any secondary impacts on the social environment or infrastructure and public facilities. The proposed project strictly involves drainage improvements. There will not be any elements of the project contributing to immigration of residents or additional visitors to the island. The proposed project will not impact other existing infrastructure facilities or public facilities in the immediate area.

7. *Involves a substantial degradation of environmental quality.*

The proposed project will not involve a substantial degradation to the quality of the surrounding environment. The drainage improvements construction activities will be performed on already urbanized areas, and necessary measures will be implemented during construction to minimize erosion, noise, traffic, and other short-term impacts. Construction of the drainage improvements will require clearing and grubbing of existing vegetation at Pukele Stream and excavation, backfill and restoration at Carlos Long Street, Palolo Avenue and Pukele Stream. Construction impacts will be short-term; and in the long-term, the drainage improvements will not cause a degradation of environmental quality of the existing Carlos Long Street, Palolo Avenue, Pukele Stream and downstream Anuenue School site.

8. *Is individually limited, but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

This proposed project only involves drainage improvements as described in **Chapter 2 Project Description** of this document. Impacts associated with the project were addressed in **Chapter 4** of this document and are mainly associated with construction activities, which are temporary and short-term. Thus, the cumulative impacts of the proposed project were considered in assessing environmental impacts; and it was determined that the project will not have a significant effect on the environment. This project does not involve the commitment for larger actions since it is only intended to provide a safer environment against potential overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drainage system from a 10-year storm event.

9. *Substantially affects a rare, threatened, or endangered species, or its habitat.*

There are no known rare, endangered or threatened botanical resources on the proposed project site, or faunal and avifaunal species inhabiting the area, which may be affected by construction activities or the existence of the proposed drainage improvements. Necessary control measures and best management practices will be implemented to minimize runoff and other potential short-term impacts associated with construction activity. Thus, the proposed drainage improvements are not expected to substantially affect rare, threatened, or endangered species or potential habitat for such species.

10. *Detrimentially affects air or water quality or ambient noise levels.*

The proposed project will not have a detrimentally significant impact on air or water quality, or ambient noise levels. Impacts associated with these factors will be limited to short-term construction activities. However, such impacts are expected to be minor due to the relatively minimal amount of grading and excavation proposed. To further minimize impacts, construction activities will be subject to applicable State and City regulations relating to air and water quality and noise levels as discussed under **Chapter 4** of this document.

11. *Affects or likely to suffer damage by being located in an environmentally sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.*

The proposed project area is not located within an environmentally sensitive area such as a flood plain, tsunami zone, beach, estuary, fresh water or coastal waters. Consequently, the project will not be affected by such hazards or impact such environmentally sensitive areas. However, the project site is located within an area subject to overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drainage system from a 10-year storm event. As discussed

under **Chapter 4** of this document, the proposed project's drainage improvements will help to mitigate the occurrence of overflow conditions at each manhole, catch basin, and grated inlet throughout the existing drainage system. The project site is also located within Zone X, areas determined to be outside the 500-year flood plain of FIRM of Federal Insurance Program, as discussed under **Chapter 4** of this document. Since the improvements are expected to be designed and constructed in compliance with the City Standards and practices and Building Code requirements for improvements within flood Zone X, they should not suffer damage from such natural hazards as compared to existing residences in the area. The proposed project will improve existing conditions and will not suffer damage from erosion and geological hazards by being located in such environmentally sensitive area.

12. *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.*

The proposed project will not affect scenic vistas or viewplanes since they are located in an area that has not been identified by the State and the City as a visual resource. The Carlos Long Street Drainage Improvements site and adjacent properties are owned by the City, BWS and various owners, and will be constructed below existing ground surface and will not impact scenic views.

13. *Requires substantial energy consumption.*

The proposed project will not require substantial energy consumption or any increase in existing electrical distribution facilities and power generating sources. Energy will be consumed for short-term construction activities such as excavation, backfilling, construction of drainage improvements and restoration. Energy consuming construction equipment such as backhoes, trucks, compactors pavers, etc., will be used for these operations. Substantial energy will not be consumed. During operation of the new drainage improvements, energy will not be consumed to convey storm flows to Pukele Stream. Storm flows will be by gravity and will not require any energy consumption.

## **7.2 ANTICIPATED DETERMINATION**

Based upon the discussions of the Carlos Long Street Drainage Improvements project affect on the environment in relation to the 13 Significance Criteria, it is determined that the improvements planned under this project will not have a significant impact on the surrounding environment.

It is anticipated that a Finding of No Significant Impact (FONSI) determination will be warranted for the Carlos Long Street Drainage Improvements project based upon the information provided in this Draft EA.

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## APPENDIX A

### Preliminary Estimated Construction Cost

**PRELIMINARY ESTIMATED CONSTRUCTION COST  
CARLOS LONG STREET DRAINAGE IMPROVEMENTS**

**A. HILLSIDE DRAIN SYSTEM**

**1. DRAIN LINE IMPROVEMENTS**

Downstream VPI	Upstream VPI	New Box Size (W X D) (ft)	Drain Length (ft)	Unit Cost	Subtotal
Outlet 1	PT & VPI 2	5 x 5	289	\$2,354	\$ 680,306
PT & VPI 2	Trans 2	5 x 5	15	\$2,339	\$ 35,085
Trans 2	Junc 3	4 x 4	46	\$1,869	\$ 85,974
Junc 3	Junc 4	6 x 2.6	199	-	-
Junc 4	VPI 5	4 x 4	125	\$2,124	\$ 265,500
VPI 5	VPI 6	4 x 4	61	\$2,004	\$ 122,244
VPI 6	VPI 7	4 x 4	96	\$1,884	\$ 180,864
VPI 7	VPI 8	4 x 4	40	\$1,809	\$ 72,360
VPI 8	VPI 9	4 x 4	57	\$1,869	\$ 106,533
VPI 9	VPI 10	4 x 4	105	\$1,884	\$ 197,820
VPI 10	VPI 11	4 x 4	53	\$1,869	\$ 99,057
VPI 11	VPI 12	4 x 4	47	\$1,914	\$ 89,958
VPI 12	VPI 13	4 x 4	49	\$1,929	\$ 94,521
VPI 13	VPI 14	4 x 4	58	\$1,929	\$ 111,882
VPI 14	VPI 15	4 x 4	57	\$1,974	\$ 112,518
VPI 15	VPI 16	4 x 4	50	\$2,034	\$ 101,700
VPI 16	VPI 17	4 x 4	83	\$2,019	\$ 167,577
VPI 17	VPI 18	4 x 4	64	\$2,019	\$ 129,216
VPI 18	VPI 19	4 x 4	70	\$2,034	\$ 142,380
VPI 19	PC & VPI 20	4 x 4	48	\$1,839	\$ 88,272
PC & VPI 20	Trans 20	4 x 4	40	\$1,674	\$ 66,960
Trans 20	Intake 21	6 x 4	6	\$2,004	\$ 12,024
<b>SUBTOTAL DRAIN LINES</b>			<b>1,658</b>		<b>\$ 2,962,751</b>

**2. DRAIN MANHOLE IMPROVEMENTS**

Manhole	Size (ft)	Improvement	Unit (ea)	Unit Cost	Subtotal
DMH 1	4	Access Shaft	1	\$13,000	\$ 13,000
DMH 2	4	Access Shaft	1	\$10,000	\$ 10,000
DMH 3	4	Access Shaft	1	\$13,000	\$ 13,000
DMH 4	4	Access Shaft	1	\$10,000	\$ 10,000
DMH 5	4	Access Shaft	1	\$10,000	\$ 10,000
DMH 6	4	Access Shaft	1	\$10,000	\$ 10,000
DMH 7	4	Access Shaft	1	\$10,000	\$ 10,000
DMH 8	4	Access Shaft	1	\$13,000	\$ 13,000
DMH 9	4	Access Shaft	1	\$13,000	\$ 13,000
DMH 10	4	Access Shaft	1	\$10,000	\$ 10,000
<b>SUBTOTAL DRAIN MANHOLES</b>					<b>\$ 112,000</b>

**PRELIMINARY ESTIMATED CONSTRUCTION COST  
CARLOS LONG STREET DRAINAGE IMPROVEMENTS**

**3. MISCELLANEOUS IMPROVEMENTS**

Improvement	Unit (ea)	Unit Cost	Subtotal
Utility Crossing Relocations	2	\$ 40,000	\$ 80,000
Connection at Existing Junc 3 and Junc 4	2	\$ 10,000	\$ 20,000
Reconstruction at Intake Structure	1	L.S.	\$ 30,000
Construction at Outlet 1 w/Energy Dissipators	1	L.S.	\$ 40,000
<b>SUBTOTAL MISCELLANEOUS IMPROVEMENTS</b>			<b>\$ 170,000</b>

SUBTOTAL HILLSIDE DRAIN SYSTEM	\$ 3,244,751
CONTINGENCY (20%)	\$ 648,950
<b>TOTAL HILLSIDE DRAIN SYSTEM</b>	<b>\$ 3,893,701</b>

**SAY \$ 3,900,000**

**B. SUBDIVISION DRAIN SYSTEM**

**1. DRAIN LINE IMPROVEMENTS**

Downstream	Upstream	Pipe Size (in)	Length (ft)	Unit Cost	Subtotal
DMH-A7	DMH-A8A	36	34	\$769	\$ 26,146
DMH-A8A	DMH-A9A	36	232	\$709	\$ 164,488
DMH-A9A	CB-A10	36	84	\$764	\$ 64,176
<b>SUBTOTAL DRAIN LINES</b>			<b>350</b>		<b>\$ 254,810</b>

**2. DRAIN MANHOLE IMPROVEMENTS**

Drain	Size (ft)	Improvement	Unit (ea)	Unit Cost	Subtotal
DMH-A8A	4	New DMH	1	\$10,000	\$ 10,000
DMH-A9A	4	New DMH	1	\$13,000	\$ 13,000
<b>SUBTOTAL DRAIN MANHOLES</b>					<b>\$ 23,000</b>

**3. MISCELLANEOUS IMPROVEMENTS**

Improvement	Unit (ea)	Unit Cost	Subtotal
Connection at Existing Drain CB-A10	1	\$ 10,000	\$ 10,000
Connection at DMH-A7	1	\$ 10,000	\$ 10,000
<b>SUBTOTAL MISCELLANEOUS IMPROVEMENTS</b>			<b>\$ 20,000</b>

SUBTOTAL SUBDIVISION DRAIN SYSTEM	\$ 297,810
CONTINGENCY (20%)	\$ 59,562
<b>TOTAL SUBDIVISION DRAIN SYSTEM</b>	<b>\$ 357,372</b>

**SAY \$ 360,000**

**C. TOTAL COST FOR HILLSIDE AND SUBDIVISION  
DRAIN SYSTEM IMPROVEMENTS**

**SAY \$ 4,260,000**

**SAY \$ 4,300,000**

## APPENDIX B

### Pre-Assessment Agencies & Public Consultation Responses



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT  
FORT SHAFTER, HAWAII 96858-5440

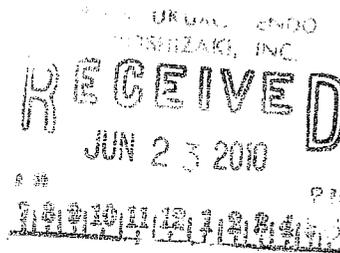
REPLY TO  
ATTENTION OF:

June 21, 2010

Regulatory Branch

File Number POH-2010-00137<sup>6</sup>

Howard K. Endo, Ph.D., P.E.  
President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, HI 96816-3715



Dear Dr. Endo:

This responds to your request for written comments for a draft Environmental Assessment (dEA) which will address activities and impacts of the proposed Carlos Long Street Drainage Improvements project located on a 1,660 foot corridor involving a discharge point at Pukele Stream and a tributary drainage known as the Narcissus Place drainage ditch at various unidentified TMK parcels at Kaimuki and Palolo, Oahu.

The dEA should indicate that waters of the United States, as represented by Pukele Stream and any tributaries to it, are in and adjacent to the proposed project area. The dEA should state in appropriate sections the potential for waters of the U.S. to be impacted by construction of project structures, associated ground disturbing activities, and the influx of potential contaminants to the receiving waters of Waiomao and Palolo Streams and the Ala Wai Canal. Upon our receipt of the dEA, we will be able to provide a determination whether a Department of Army (DA) permit for Section 404 activities of the Clean Water Act may, or may not be, required for the proposed Carlos Long Street Drainage Improvements project.

Section 404 requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including wetlands, prior to conducting the work (33 U.S.C. 1344). For regulatory purposes, the U.S. Army Corps of Engineers (Corps) defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The area of Corps jurisdiction under Section 404 extends to the Ordinary High Water Mark (OHWM) for navigable waters other than the Pacific Ocean, and to the upland boundary of any adjacent wetlands.

Thank you for your consideration of potential impacts to the aquatic environment of the Palolo watershed. Please contact Mr. Farley Watanabe of my staff at 438-7701, facsimile 438-4060, or by email at [Farley.K.Watanabe@usace.army.mil](mailto:Farley.K.Watanabe@usace.army.mil) if you have any questions or need additional information. Please refer to File Number **POH-2010-00137** in any future correspondence with us.

Sincerely,

George P. Young, P.E.  
Chief, Regulatory Branch

## SEY Engineers

---

**From:** Paula\_Levin@fws.gov  
**Sent:** Thursday, August 12, 2010 5:20 PM  
**To:** seyeng@lava.net  
**Cc:** cindy.s.barger@usace.army.mil  
**Subject:** EA for the Carlos Long Street Drainage Improvement project, Honolulu

Dr. Howard Endo:

This is in response to the June 1, 2010 request for comments on the subject proposal. Please forgive the delay in response. USFWS has been severely understaffed for several months. Therefore, we will defer detailed project review until we have notification from the Regulatory Branch of U.S. Army Corps of Engineers (Corps) regarding your permit application for work in waters of the U.S.

In the interim, please note that the kind of information we will need to see may include native stream species survey data, proposed best management practices, mitigation measures for any actions that will divert, otherwise impact, harden or fill stream bed or banks.

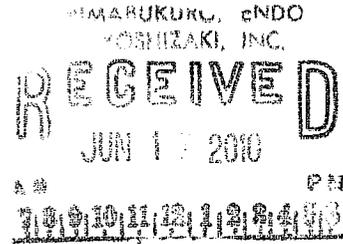
Also, please be advised: the Corps planning and Civil Works Branch, in partnership with the City and County of Honolulu and the HI Div. of Land and Natural Resources (DLNR) are currently engaged in a flood risk management and ecological restoration study in the Ala Wai Watershed, including the tributary streams that would be impacted by your proposal. Please explore the project website to ascertain whether your project goals are aligned with the bigger picture goals of the watershed plan, and recognize that any proposed realignments or work in the stream could affect baseline data being gathered or could effect hydraulic conditions for the over-arching project planning and engineering process.

Thank you for your attention to this important matter.

Paula Levin  
USFWS Pacific Islands  
Coastal Conservation  
(808)792-9417



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



OFFICE OF THE SUPERINTENDENT

June 14, 2010

Mr. Howard K. Endo, President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Mr. Endo:

SUBJECT: Pre-assessment Comments on the Proposed Carlos Long Street  
Drainage Improvements, Palolo Valley, Oahu

The Department of Education appreciates your request for comments prior to the preparation of an environmental assessment (EA) for the Carlos Long Street drainage improvements. Our interests center on the possible impacts of drainage improvements to the campus of Anuenue School. Pukele Stream crosses school land and forms the northern boundary of most of the campus.

The figures in your letter indicate that the improvements along Carlos Long Street and Palolo Avenue will empty into Pukele Stream, downstream of the Pukele Stream Bridge. Since that proposed outlet to the Stream is upstream of the school, we believe there will be direct impacts to the school.

We expect that the EA will discuss the present drainage system, including the stream, and how the system operated in past storm situations. We would also expect to see an indication of the estimated increase in volume of the stream, particularly as it crosses school land. We are also interested in reading about the impact of the improvements on the flora and fauna of the stream.

It might be extremely beneficial in the preparation of the EA to consult with the school students and staff. We look forward to reviewing the EA. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at 377-8301.

Very truly yours,

Kathryn S. Matayoshi  
Interim Superintendent

KSM:jmb

- c: Randolph Moore, Assistant Superintendent, OSFSS  
Stephen Schatz, CAS, Kaimuki/McKinley/Roosevelt Complex Areas

LINDA LINGLE  
GOVERNOR OF HAWAII

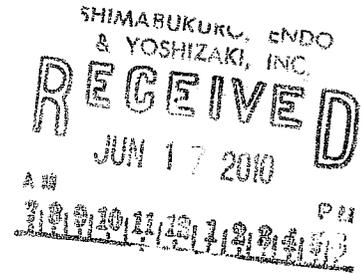


LAURA H. THIELEN  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809



June 14, 2010

Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12th Avenue Room 309  
Honolulu, Hawaii 96816

Attention: Mr. Howard K. Endo, Ph.D., P.E., President

Ladies and Gentlemen:

Subject: Pre-Assessment for an Environmental Assessment for the Carlos Long Street Drainage Improvements Project

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR), Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Division of Forestry & Wildlife, Land Division-Oahu, Commission on Water Resource Management, Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Morris M. Atta".  
Morris M. Atta  
Acting Administrator



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 3, 2010

MEMORANDUM

TO: **DLNR Agencies:**  
 Div. of Aquatic Resources  
 Div. of Boating & Ocean Recreation  
 Engineering Division  
 Div. of Forestry & Wildlife  
 Div. of State Parks  
 Commission on Water Resource Management  
 Office of Conservation & Coastal Lands  
 Land Division – Oahu District  
 Historic Preservation

RECEIVED  
LAND DIVISION  
2010 JUN 14 A 10:49  
DEPT. OF LAND & NATURAL RESOURCES  
STATE OF HAWAII

FROM: Charlene Unoki, Assistant Administrator  
SUBJECT: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project  
LOCATION: Island of Oahu  
APPLICANT: Shimabukuro, Endo & Yoshizaki, Inc. on behalf of City & County of Honolulu Department of Design & Construction

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by **June 12, 2010**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- ( ) We have no objections.
- ( ) We have no comments.
- (x) Comments are attached.

Signed:   
Date: 6/10/10

10 JUN 10 10 24 AM HNL

**DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION**

**LD/CharleneUnoki**

**RE: PreAssessEACarlosLongStDrainageImpvts**

**Oahu.776**

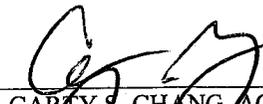
**COMMENTS**

- ( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone \_\_\_\_.
- (X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The Flood Insurance Program does not have any regulations for developments within Flood Zone X.**
- ( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is \_\_\_\_.
- ( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- ( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
  - ( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.
  - ( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
  - ( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
- 
- ( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
  - ( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
  - ( ) Additional Comments: \_\_\_\_\_  
\_\_\_\_\_
  - ( ) Other: \_\_\_\_\_  
\_\_\_\_\_

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed:   
CARTY S. CHANG, ACTING CHIEF ENGINEER

Date: 9/26/10



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 3, 2010

RECEIVED  
COMMISSION ON WATER  
RESOURCE MANAGEMENT  
2010 JUN -3 AM 11:13

RECEIVED  
LAND DIVISION  
2010 JUN 10 P 3:12

RECEIVED  
DEPT. OF LAND &  
NATURAL RESOURCES  
STATE OF HAWAII

MEMORANDUM

DEAR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division - Oahu District
- Historic Preservation

PR

TO:

FROM: Charlene Unoki, Assistant Administrator

SUBJECT: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project

LOCATION: Island of Oahu

APPLICANT: Shimabukuro, Endo & Yoshizaki, Inc. on behalf of City & County of Honolulu  
Department of Design & Construction

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by **June 12, 2010**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: W. Payne

Date: 6/3/10

LINDA LINGLE  
GOVERNOR OF HAWAII



LAURA H. THIELEN  
CHAIRPERSON  
WILLIAM D. BALFOUR, JR.  
SUMNER ERDMAN  
NEAL S. FUJIWARA  
CHIYOME L. FUKINO, M.D.  
DONNA FAY K. KIYOSAKI, P.E.  
LAWRENCE H. MIKE, M.D., J.D.  
KEN C. KAWAHARA, P.E.  
DEPUTY DIRECTOR

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
**COMMISSION ON WATER RESOURCE MANAGEMENT**  
P.O. BOX 621  
HONOLULU, HAWAII 96809

June 8, 2010

REF: Carlos Long Street Drainage Pre-EA

TO: Morris Atta, Administrator  
Land Division

FROM: Ken C. Kawahara, P.E., Deputy Director *KC*  
Commission on Water Resource Management

SUBJECT: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project, Oahu

FILE NO.: NA  
TMK NO.: 3-4-04:01, 3-4-05:01, 3-4-12:24, 3-4-24:43

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://www.hawaii.gov/dlnr/cwrm>.

Our comments related to water resources are checked off below.

- 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EPA as having high water efficiency can be found at <http://www.epa.gov/watersense/pp/index.htm>.

- 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://hawaii.gov/dbedt/czm/initiative/lid.php>.
- 6. We recommend the use of alternative water sources, wherever practicable.
- 7. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:

Additional information and forms are available at [http://hawaii.gov/dlnr/cwr/resources\\_permits.htm](http://hawaii.gov/dlnr/cwr/resources_permits.htm).

- 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water.
- 9. A Well Construction Permit(s) is (are) required any well construction work begins.
- 10. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- 11. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 12. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 13. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.
- 14. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.
- 15. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 16. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- OTHER:

If there are any questions, please contact Robert Chong at 587-0266.

LINDA LINGLE  
GOVERNOR OF HAWAII



Laura H. Thielen  
Chairperson  
Board of Land and Natural Resources  
Commission on Water Resource Management

↓  
Forestry section  
review



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 3, 2010

MEMORANDUM

- TO: **DLNR Agencies:**
- Div. of Aquatic Resources
  - Div. of Boating & Ocean Recreation
  - Engineering Division
  - Div. of Forestry & Wildlife
  - Div. of State Parks
  - Commission on Water Resource Management
  - Office of Conservation & Coastal Lands
  - Land Division - Oahu District
  - Historic Preservation

RECEIVED  
LAND DIVISION  
2010 JUN -9 A 10:10  
DEPT. OF LAND &  
NATURAL RESOURCES,  
STATE OF HAWAII.

FROM: Charlene Unoki, Assistant Administrator

SUBJECT: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project

LOCATION: Island of Oahu

APPLICANT: Shimabukuro, Endo & Yoshizaki, Inc. on behalf of City & County of Honolulu Department of Design & Construction

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by **June 12, 2010**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:

Date: 6/7/10

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

LAURA H. THELEN  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI  
FIRST DEPUTY

KEN C. KAWAHARA  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

June 8, 2010

Henry K Endo, Ph.D. P.E  
Shimabukuro, Endo & Yoshizaki Inc  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawai'i 96816

LOG NO: 2010.2182  
DOC NO: 1006NM27  
Archaeology

Dear Mr. Endo:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –  
Pre- EA Carlos Long Street Drainage Improvements  
Palolo Ahupua'a, Honolulu District, Oahu Hawai'i  
TMK: (1) none given**

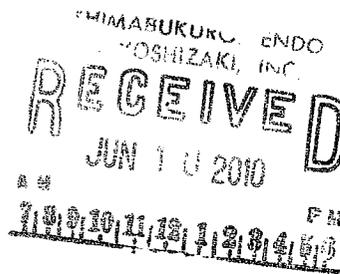
Thank you for providing the opportunity to comment on this consultation which we received on June 1, 2010. We concur that there will be **"no historic properties affected"** by this project since the area has been developed.

Please contact me at (808) 692-8015 if you have any questions or concerns regarding this letter.

Aloha,

A handwritten signature in black ink that reads "Nancy A. McMahon".

Nancy A. McMahon (Deputy SHPO)  
Archaeology and Historic Preservation Manager





STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

June 3, 2010

MEMORANDUM

TO: *TL*  
*TL*

**DLNR Agencies:**

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division - Oahu District
- Historic Preservation

FROM: *TL* Charlene Unoki, Assistant Administrator

SUBJECT: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project

LOCATION: Island of Oahu

APPLICANT: Shimabukuro, Endo & Yoshizaki, Inc. on behalf of City & County of Honolulu Department of Design & Construction

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by **June 12, 2010**.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- ( ) We have no objections.
- ( ) We have no comments.
- (  ) Comments are attached.

Signed: *T. Chiu*

Date: *6/4/2010* *PC*

Comment: Based on the maps on figures 2 and 3, the only State parcel affected by the project is (1) 3-4-004:001. Please note a disposition from the Land Board is required for improvement thereon.

LINDA LINGLE  
GOVERNOR OF HAWAII



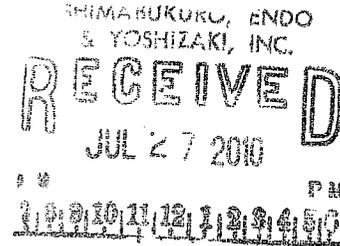
LAURA H. THIELEN  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

July 22, 2010



Mr. Wallace K. Endo, P.E.  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Mr. Endo:

Subject: Pre-Assessment for Environmental Assessment for the Carlos Long Street Drainage Improvements Project; Palolo Valley Homesteads, Waiomao, Oahu; Tax Map Key:(1) 3-4-004:001

We write to you in response to your letter dated July 19, 2010, requesting further information related to our previous comment concerning the subject request.

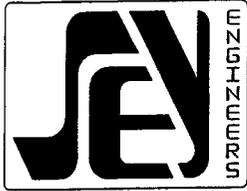
You are requesting clarification concerning the following comment: "Please note a disposition from the Land Board is required for improvement thereon." For clarification purposes of this request, any improvement(s) placed upon State land under to the jurisdiction of this office requires a land disposition issued by the Land Board. Some common examples of a land disposition include: a perpetual easement, a non-exclusive easement, a general lease or a governor's executive order. We understand that in the past, the Department of Design and Construction had submitted previous requests to the Land Board for land disposition purposes, on the behalf of other City agencies.

If you have any questions, please feel free to contact us at 587-0408.

Thank you.

Sincerely Yours,

  
Timmy Chee  
Land Agent



**SHIMABUKURO, ENDO & YOSHIZAKI, INC.**

*Civil, Environmental & Structural Engineers*  
1126 12th Avenue, Room 309  
Honolulu, Hawaii 96816-3715  
Ph.: (808) 737-1875 FAX: (808) 734-5516  
E-mail: seyeng@lava.net

July 19, 2010

State of Hawaii  
Department of Land and Natural Resources  
Land Division  
P.O. Box 621  
Honolulu, Hawaii 96809

Attention: Land Division – Oahu District

Subject: Pre-Assessment for Environmental Assessment  
Carlos Long Street Drainage Improvements

Reference is made to your memorandum dated June 3, 2010, signed by T. Chee (copy attached). We request further information on the comment: *Please note a disposition from the Land Board is required for improvement thereon.* What is the disposition from the Land Board and how may we obtain further information on this matter for incorporation into the next phase of the Environmental Assessment process in acknowledgment of all comments received.

Your assistance in this matter is appreciated on or by August 4, 2010 in order for us to comply with the client's schedule. Please do not hesitate to contact me should you require further information.

Very truly yours,

  
Wallace K. Endo, P.E.

WKE:sno

Attachment



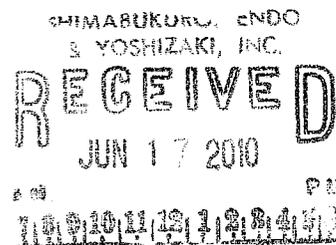
**STATE OF HAWAII**  
**DEPARTMENT OF HEALTH**  
P.O. BOX 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to:  
EMD / CWB

06042PMT.10

June 16, 2010

Mr. Howard K. Endo, Ph.D., P.E.  
President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715



Dear Mr. Endo:

**SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment  
Carlos Long Street Drainage Improvements Project  
Upper Palolo Valley, Honolulu, Island of Oahu, Hawaii**

The Department of Health (DOH), Clean Water Branch (CWB), has reviewed the subject document dated June 1, 2010, and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at <http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. The operation and maintenance and construction related activities for the proposed facility/project shall comply with the exiting National Pollutant Discharge Elimination System (NPDES) permit issued to the City and County of Honolulu, Department of Environmental Services for its Municipal Separate Storm Sewer System on the Island of Oahu, Hawaii, Permit No. HI S000002. In addition, the storm water discharges associated with the proposed construction activities and the operation of the final drainage systems shall

be required to receive an approval from this City and County of Honolulu agency prior to conducting such construction activities and the operation of the drainage systems.

3. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:
  - a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.
  - b. Construction Activity Dewatering.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html>.

4. For types of wastewater not listed in Item 3 above or wastewater discharging into Class 1 or Class AA waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html>.
5. Please call the Army Corps of Engineers at (808) 438-9258 to determine if the subject project will require a Department of the Army (DA) permit(s). Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.
6. Please note that all discharges related to the project construction or operation activities, whether or not a NPDES permit coverage and/or 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

Mr. Howard K. Endo, Ph.D, P.E.

06042PMT.10

June 16, 2010

Page 3

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

Sincerely,



ALEC WONG, P.E., CHIEF  
Clean Water Branch

MT:ml

c: DOH - EPO # I-3211 [via email only]

LINDA LINGLE  
GOVERNOR



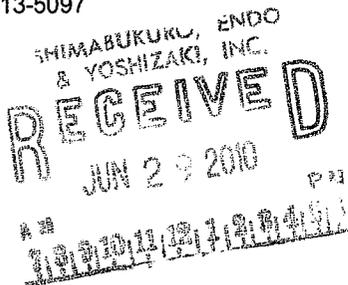
BRENNON T. MORIOKA  
DIRECTOR

Deputy Directors  
MICHAEL D. FORMBY  
FRANCIS PAUL KEENO  
BRIAN H. SEKIGUCHI  
JIRO A. SUMADA

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

IN REPLY REFER TO:  
STP 8.0134

June 24, 2010



Mr. Howard K. Endo, Ph.D., P.E.  
President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Mr. Endo:

Subject: Carlos Long Street Drainage Improvements Project  
Pre-Consultation for Draft Environmental Assessment (DEA)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands that the subject drainage project extends about 1,660 feet from the main discharge point at Pukele Stream south of the Pukele Stream Bridge at the south end to the Narcissus Place Drainage Ditch at the north end.

Given the project's location, DOT does not anticipate any significant, adverse impacts to its transportation facilities.

DOT appreciates the opportunity to provide comments. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at telephone number (808) 587-2356.

Very truly yours,

*Francis Paul Keeno*

*for* BRENNON T. MORIOKA, Ph.D., P.E.  
Director of Transportation

# BOARD OF WATER SUPPLY

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



June 15, 2010

MUFI HANNEMANN, Mayor

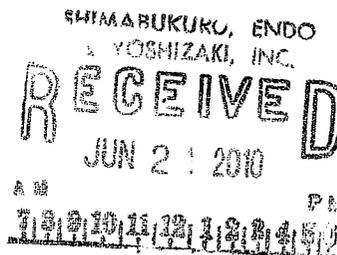
RANDALL Y. S. CHUNG, Chairman  
SAMUEL T. HATA  
WILLIAM K. MAHOE  
THERESIA C. McMURDO  
ADAM C. WONG

JEFFREY S. CUDIAMAT, Ex-Officio  
BRENNON T. MORIOKA, Ex-Officio

WAYNE M. HASHIRO, P.E.  
Manager and Chief Engineer

DEAN A. NAKANO  
Deputy Manager

Howard K. Endo, Ph.D., P.E.  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715



Dear Dr. Endo:

Subject: Your Letter Dated June 1, 2010 Requesting Comments on the Environmental Assessment for Carlos Long Street Drainage Improvements, TMK: 3-4-20:3, 3-4-24: 43 & 44

Thank you for the opportunity to comment on the proposed project.

The construction drawings should be submitted for our review.

The construction schedule should be coordinated to minimize impact to the water system.

If you have any questions, please contact Robert Chun at 748-5443.

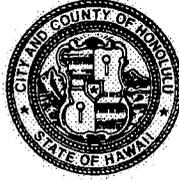
Very truly yours,

PAUL S. KIKUCHI  
Chief Financial Officer  
Customer Care Division

DEPARTMENT OF DESIGN AND CONSTRUCTION  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11<sup>TH</sup> FLOOR  
HONOLULU, HAWAII 96813  
Phone: (808) 768-8480 • Fax: (808) 768-4567  
Web site: [www.honolulu.gov](http://www.honolulu.gov)

MUFI HANNEMANN  
MAYOR



CRAIG I. NISHIMURA, P.E.  
DIRECTOR

COLLINS D. LAM, P.E.  
DEPUTY DIRECTOR

June 9, 2010

Mr. Howard Endo  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Mr. Endo:

Subject: Draft Environmental Assessment (EA) Carlos Long Street  
Drainage Improvements Project

Thank you for inviting us to review the Draft Environmental Assessment (EA).  
The Department of Design and Construction does not have any comments to offer at  
this time.

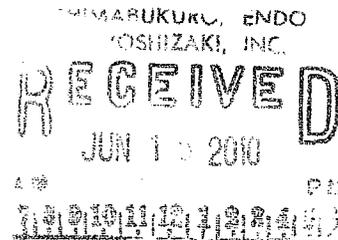
Should you have any questions, please contact me at 768-8480.

Very truly yours,

A handwritten signature in black ink, appearing to read "Craig I. Nishimura".

Craig I. Nishimura, P.E.  
Director

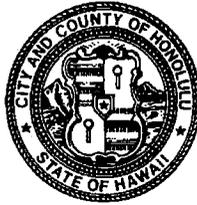
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DEPARTMENT OF FACILITY MAINTENANCE  
**CITY AND COUNTY OF HONOLULU**

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707  
Phone: (808) 768-3343 • Fax: (808) 768-3381  
Website: www.honolulu.gov

MUFI HANNEMANN  
MAYOR



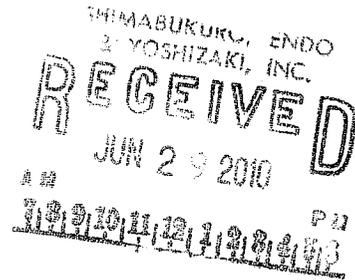
JEFFREY S. CUDIAMAT, P.E.  
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO  
DEPUTY DIRECTOR

IN REPLY REFER TO:  
DRM 10-506

June 28, 2010

Shimabukuro, Endo & Yoshizaki, Inc.  
Attn: Howard Endo, Ph.D., P.E.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816



Dear Mr. Endo:

Subject: Environmental Assessment (EA)  
Carlos Long Street Drainage Improvements

Thank you for the opportunity to review the EA dated June 1, 2010 for the proposed Carlos Long Street Drainage Improvements Project.

We have no comments to offer at this time.

Should you have any questions, please call Thomas Takeuchi of the Division of Road Maintenance, at 768-3608.

Sincerely,

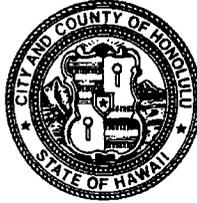
A handwritten signature in black ink that reads "Jeffrey S. Cudiamat".

Jeffrey S. Cudiamat, P.E.  
Director and Chief Engineer

DEPARTMENT OF FACILITY MAINTENANCE  
**CITY AND COUNTY OF HONOLULU**

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707  
Phone: (808) 768-3343 • Fax: (808) 768-3381  
Website: www.honolulu.gov

MUFI HANNEMANN  
MAYOR



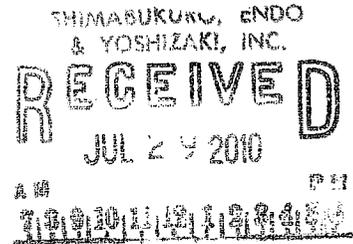
JEFFREY S. CUDIAMAT, P.E.  
DIRECTOR AND CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO  
DEPUTY DIRECTOR

IN REPLY REFER TO:  
DRM 10-559

July 26, 2010

Shimabukuro, Endo & Yoshizaki, Inc.  
Attn: Howard K. Endo  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816



Dear Mr. Endo:

Subject: Carlos Long Street Drainage Improvements

Thank you very much for allowing us the opportunity to review your proposal to prepare an environmental assessment for the subject project. A couple of years ago the Department of Design and Construction installed under drains along Gardenia Street, however, seepage is still evident.

An investigation of the hillside above the 8'x 6' concrete ditch, above Narcissus Street revealed surface storm water from the hillside is being intercepted by a fissure above the concrete ditch and therefore, directing the water underground.

Can you consider another alternative to combine the proposed Recommended Hillside Drain System and Subdivision Drain System Modifications at the Palolo Avenue/Carlos Long Street intersection and increase the size of the new box drain to carry storm water from both systems to Pukele Stream? This would allow the section of the existing Drain Line A south of Palolo Avenue to be abandoned.

Should you have any questions, please call Thomas Takeuchi of the Division of Road Maintenance, at 768-3608.

Sincerely,

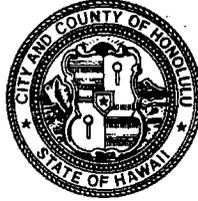
A handwritten signature in black ink, appearing to read "Jeffrey S. Cudiamat".

Jeffrey S. Cudiamat, P.E.  
Director and Chief Engineer

DEPARTMENT OF PARKS & RECREATION  
**CITY AND COUNTY OF HONOLULU**

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707  
Phone: (808) 768-3003 • Fax: (808) 768-3053  
Website: www.honolulu.gov

MUFI HANNEMANN  
MAYOR

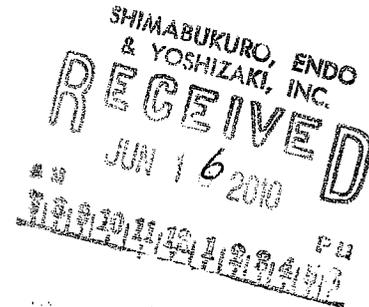


June 10, 2010

LESTER K. C. CHANG  
DIRECTOR

RICHARD HARU  
DEPUTY DIRECTOR

Howard K. Endo, Ph. D., P.E.  
President  
Shimabukuro, Endo, & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715



Dear Mr. Endo:

**Project: Carlos Long Drainage Improvements, Environmental Assessment**

This is in reply to your letter of June 1, 2010, regarding the above-mentioned project of the Department of Design and Construction.

Your letter and attachments were forwarded to the Division of Urban Forestry for review, and following are their comments:

1. The alignment of the proposed drainage system is shown conceptually on Figure Nos. 2 and 3, however; important information, such as curbs, sidewalks, street trees, fire hydrants, water meters, driveways, power poles, street lights, underground and overhead utility lines, is missing on the drawings.

Please submit detailed plans using an engineering scale of 1 inch equals 40 feet or 1 inch equals 20 feet, which is preferred. Existing City trees, to include park and street trees, and private property trees shall be surveyed, identified by genus, species, height and caliper size noted, and the tree canopy accurately drawn to scale on the plan.

2. Based on this pre-assessment review, we are unable to determine if the root system and stability of the trees will be impacted by the proposed improvements. However, should there be a need for tree root and/or branch pruning work, the General Contractor (GC) shall hire a Qualified Arborist (QA), approved by the Division of Urban Forestry (DUF), at no additional cost to the City. The GC shall submit the completed Qualified Arborist Application, as attached, to the Arboriculture Section of DUF at 3902 Paki Avenue, Honolulu, Hawaii 96815, or fax to 971-7160, for approval.

3. The QA will prepare a Tree Assessment Report (TAR) and a Tree Protection Plan (TPP) showing trees within the project limits line, silt fence barrier, erosion control areas, on and off-site trees, identifying vehicular parking areas for workers, and equipment, ingress/egress routes to the project, excavation, demolition, trenching work, and trees proposed for removal, replacement, and/or relocation that may be affected by the proposed construction.
4. The TAR and TPP shall include trees that require tree protection, and shall indicate the extent of the tree protection barrier on the plan. If at all possible, locate the tree protection barrier outside the drip line. Place the barriers along the perimeter of the planting area for trees within planter strips. Include trees that require root and /or branch pruning due to the construction work, to protect the tree trunks, roots, and branches from damage, as well as preventing soil compaction, and erosion when equipment, materials, and vehicles require access under the drip line, or as determined by DUF.
5. Please include with the plan, the "Tree Protection Zone Warning Sign (TPZWS)" and "Tree Protection Zone Fence Detail (TPZFD)", as attached.
6. When the TAR and TPP have been prepared, the GC shall contact the Arboriculture Section of DUF, at 971-7151, to schedule an on site pre-construction meeting with the Department of Design and Construction Project Manager, QA, GC, and DUF for review and comment, and to discuss the impact of the proposed work.

Discussion shall include, but not be limited to, tree protection and grounds mitigation methods to protect tree trunks, roots, and branches from damage and preventing soil compaction and erosion, tree protection fencing alignment, project limit line, silt fence barrier, erosion control areas, identifying vehicular parking areas for workers (parking is not permitted under trees and in grassed areas), staging and stockpiling areas, determining vehicle, material, and equipment ingress/egress routes to the project, excavation, demolition, trenching, construction gravel pad, watering, Formal Landscape Maintenance Period (FLMP), for grass restoration and tree care, trees proposed for removal, replacement, and/or relocation, trees that require pruning to allow for vehicle access and/or equipment setup, and any impact to City and private property trees that may be affected by the proposed construction.

7. If a visual inspection of the trees is unable to determine the amount and extent of the roots system to be pruned, DUF will require the QA to expose the tree roots prior to the approval of any excavation, demolition and trenching work.
8. In lieu of backhoe equipment and shovels, DUF may request the use of an air spade gun to expose existing roots to discuss the root pruning work.

9. Use a chainsaw when making the initial cuts in root pruning. All finish cuts shall be made using sharp hand saw, chainsaw, or approved root pruning equipment to ensure clean, non-jagged cuts.
10. The QA must make recommendations and provide alternative solutions to DUF whether tree affected by the construction work should remain, be demolished, relocated, or replaced.
11. If DUF concurs with tree removals, then replacement trees shall be required.
12. New trees shall be pre-approved at the nursery by the Landscape Contractor and concurred by DUF two weeks prior to their delivery to the project site. Please contact the Nursery and Landscape Section of DUF, at 971-7151 to schedule an inspection.
13. Replacement (new) trees shall be field stock size. The species of the replacement tree species and their planting location shall be determined by the Nursery and Landscape Section of DUF.
14. Trees that do not have a well established root system will be rejected.
15. For the duration of the construction work, the GC shall be required to water the trees and grass that are affected by the construction work.
16. For tree removals, the GC shall stump grind tree trunk 12 inches below the finish grade. Remove wood chips (do not use as backfill material.) and backfill with top soil. Tamp the topsoil to prevent settling, level to match finish grade, grass, and water.
17. Tree protection fencing shall be required for City trees that will be affected by the construction. Please show the tree protection fencing on the plans. For street trees, tree protection fencing shall be located inside the grassed planting strip and outside the tree's drip line.
18. No materials, equipment, dumping of waste debris, or vehicles shall be staged/stockpiled, parked, stored, or permitted to operate within the drip line of the trees. Driving vehicles over the tree surface roots is not permitted.
19. Vehicle parking for workers will not be permitted within the project limits line, staging areas, grassed planting strips and roadway shoulders.
20. The GC shall be responsible for the repair and restoration of areas damaged as a result of their operations at no cost to the City.
21. Grass restoration areas will require aeration, topsoil, amendments, and grass (sod, sprigs, stolons, or seed), and shall be compacted with a mechanical roller. Refer to the Department of Parks and Recreation's Landscaping and Irrigation Specifications for installation methods.

22. If it is necessary to prune any overhead tree limbs that block vehicle access to the construction site or roots that require pruning due to the excavation, demolition, and trenching work, then a QA approved by DUF, shall be required, and shall receive prior approval from DUF to perform the tree work.
23. All tree maintenance operations shall be under the direct supervision of a QA who is required to be at the work site at all times during work performed on or near trees.
24. The FLMP for root/branch pruned trees and new and/or relocated trees and grass restoration shall be 90 calendar days.
25. After the successful completion of the FLMP, root/branch pruned trees, new and/or relocated trees and other trees impacted by the construction shall be guaranteed for one year. Should any tree fail to survive by the end of the guarantee period, the GC shall install a replacement tree of the same size and species, at no cost to the City. However, the GC shall not be held liable for loss due to the lack of proper maintenance, vandalism, and/or accident.
26. If the project requires a temporary ingress/egress construction gravel pad, the GC shall take appropriate measures to ensure that the gravel does not spill onto the grassy areas of the project site, sidewalk, road and private property as this would alleviate the concern of damage to mowing equipment. Additionally, airborne gravel is a public safety concern, and if embedded in the soil, grass restoration may be compromised, delaying project completion, and extending the length of the FLMP.
27. We recommend that you submit your letter to Tyler Sugihara, Chief of the Division of Road Maintenance (DRM), Department of Facility Maintenance, for their pre-assessment review comments as DRM is responsible for maintenance of landscaping in traffic medians, triangles, and traffic calming islands.

Should you have any questions, please contact David Kumasaka, Landscape Architect III of DUF, at 971-7151.

Sincerely,



Lester K. C. Chang  
Director

LKCC:ch  
(369369)

Attachments

cc: Austin Braaten, DUF  
Brandon Au, DUF  
David Kumasaka, DUF  
Tyler Sugihara, DRM

**QUALIFIED ARBORIST APPLICATION:**

**A. EDUCATION**

List below college education and any vocational or special training

Name of School	From (Mo/Yr)	To (Mo/Yr)	Years or Credit Hours	Major Course of Study	Certificate or Degree

**B. WORK HISTORY**

List below three pruning projects that you have worked on that are similar to the work explained in this contract

Customer or Company	Inspector or Contact Person	Contact Phone Number	Number of Trees Managed	Number of People Supervised	Begin and End Dates of Contract/Job

**C. EXPERIENCE SUMMARY -- Please answer the following questions:**

- 1. IDENTIFICATION -- Describe your responsibilities in identifying trees and state purpose for making identifications.**

**C. EXPERIENCE SUMMARY (continued)**

2. **PRUNING** – Explain what type of pruning you have performed (ornamental, line clearance, drop crotch, pollarding, etc, and the types of pruning equipment and tools you have used and are familiar with.

**3. SAFETY**

a. Describe in detail your ability to recognize tree hazards and how these conditions were addressed (were they reported in writing or verbally, were they removed upon your discretion, were they pruned and monitored?)

b. Explain in detail your experience in tree operation safety and your expertise in applying rules and regulations at the job site, including but not limited to traffic control measures and application of ANSI Z133.1-1994 and ANSI A300-1995.

C. EXPERIENCE SUMMARY (continued)

4. CLEARANCE GROWTH HABITS AND GROWTH RATES – Describe two examples of jobs you have had where the knowledge of tree growth rates, growth habits, and their proper clearances were necessary to fully comply with the contract or job.

I hereby certify that all statements made on or in connection with this application including those regarding my education and employment record are true and correct to the best of my knowledge. I agree and understand that any misstatements of material facts may cause forfeiture on my part of all rights to any employment in the service of the City and County of Honolulu. I understand that all information is subject to verification.

Signature of Applicant \_\_\_\_\_ Print Name \_\_\_\_\_  
ISA Arborist Certification No. or ASCA Registration No. \_\_\_\_\_ Expiration Date \_\_\_\_\_  
Today's Date \_\_\_\_\_

# WARNING

## TREE PROTECTION ZONE

THIS FENCE AND SIGN SHALL NOT BE REMOVED WITHOUT  
APPROVAL FROM THE DIVISION OF URBAN FORESTRY  
PHONE: 971-7151

CITY AND COUNTY OF HONOLULU, DEPARTMENT OF PARKS AND RECREATION

TREE PROTECTION ZONE WARNING SIGN ENLARGEMENT  
N.T.S.

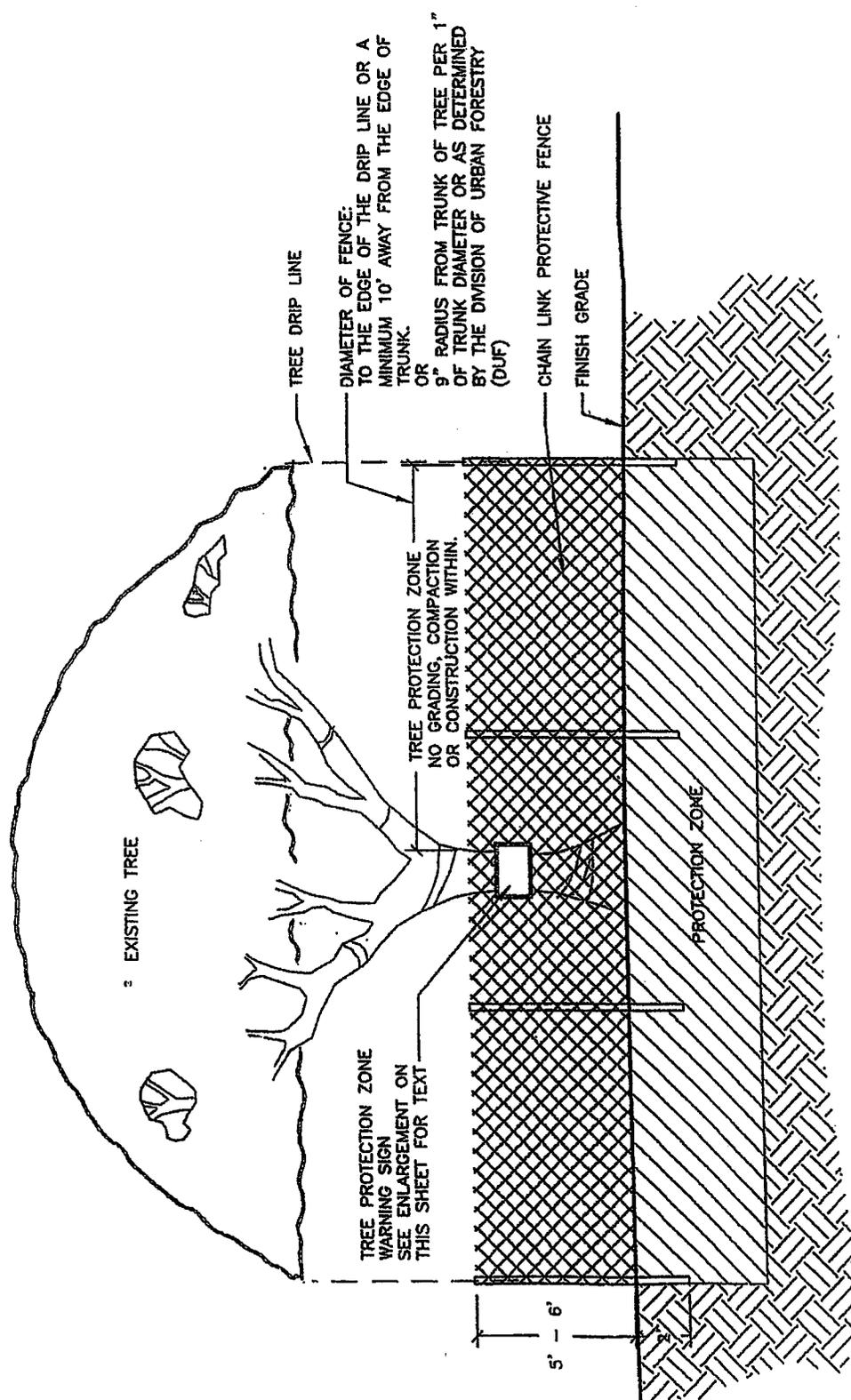
NOTES:

MINIMUM SIZE OF SIGN: 8 1/2" X 11".

SECURELY FASTEN TO FENCE.

HANG MORE THAN ONE SIGN FOR VISIBILITY PURPOSES IF NEEDED.

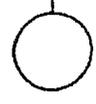
SIGN TO BE MADE OF WEATHERPROOF MATERIAL.



**NOTES:**

1. FOR TREES THAT ARE IN NARROW PLANTING STRIPS, THE ENTIRE PLANTING STRIP SHALL BE ENCLOSED
2. FOR TREE WELLS AND SMALL PLANTER AREAS THAT ARE FULL OF ROOTS, USE PLASTIC TRAFFIC BARRICADES (WATER FILLABLE) MINIMUM THREE (3) EACH, OR TYPE 1 OR TYPE 2 TRAFFIC BARRICADES, MINIMUM FOUR (4) EACH, OR AS DETERMINED BY DUF.
3. TREE WILL REQUIRE SUPPLEMENTAL WATERING
4. IF THE FENCE IS INSIDE THE DRIP LINE, PLYWOOD BOARDS OR STEEL PLATES OR HEAVY DUTY GROUND PROTECTION MATS OVER AN 8" MULCH LAYER WILL BE REQUIRED TO PROTECT THE TREE ROOTS AND GROUND FROM DAMAGE, SOIL COMPACTION AND EROSION FROM CONSTRUCTION EQUIPMENT AND VEHICLES.
5. 2" GALVANIZED IRON POSTS, DRIVEN INTO THE GROUND TO A MIN. 2' DEPTH, AT NO MORE THAN 10' SPACING.
6. THE GENERAL CONTRACTOR (GC) SHALL SCHEDULE AN ON SITE MEETING WITH MR. AUSTIN BRAATEN OF DUF TO DISCUSS THE INSTALLATION AND LAYOUT OF THE TREE PROTECTION FENCING. CONTACT: MR. BRAATEN AT 971-7151 OR 971-8120.
7. Avoid damaging tree roots during fence post installation.

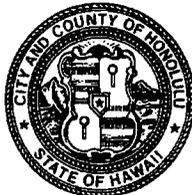
**TREE PROTECTION ZONE DETAIL**



DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
DEPT. WEB SITE: [www.honolulu.gov](http://www.honolulu.gov) • CITY WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)

MUFI HANNEMANN  
MAYOR



DAVID K. TANOUÉ  
DIRECTOR

ROBERT M. SUMITOMO  
DEPUTY DIRECTOR

June 14, 2010

2010/ELOG-1144 (df)

Howard K. Endo, PhD, P.E.  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Dr. Endo:

Subject: Draft Environmental Assessment (DEA) Preparation Notice for  
Carlos Long Street Drainage Improvements Project,  
Tax Map Key: 3-4-4, 3-4-5, 3-4-011, 3-4-024, 3-4-025

This is in response to your June 1, 2010 letter requesting our review and comments to the subject document. Our comments are as follows:

1. The DEA shall include a list of all required Federal, State and City permits and approvals. Permits and approvals from this department include subdivision approval to establish all necessary easements, One Time Review of construction plans, trenching permit and the completion and submittal of the "Point Source Identification Information" form.
2. The DEA should discuss how the plan conforms or supports relevant objectives and policies of the General Plan and the Primary Urban Center Development Plan.

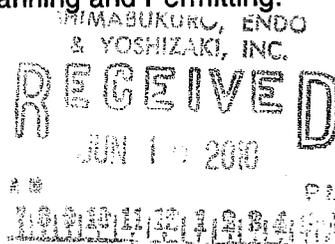
If there are any questions, please contact Don Fujii of the Site Development Division at 768-8107.

Very truly yours,

  
for David K. Tanoue, Director  
Department of Planning and Permitting.

DKT:ky  
[777014]

cc: Planning Division  
Subdivision Branch  
Wastewater Branch



DEPARTMENT OF TRANSPORTATION SERVICES  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR  
HONOLULU, HAWAII 96813

Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

MUFI HANNEMANN  
MAYOR



WAYNE Y. YOSHIOKA  
DIRECTOR

SHARON ANN THOM  
DEPUTY DIRECTOR

KENNETH TORU HAMAYASU  
DEPUTY DIRECTOR

TP5/10-369232R

June 14, 2010

Dr. Howard K. Endo, Ph.D., P.E.  
Shimabukuro, Endo, & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Dr. Endo:

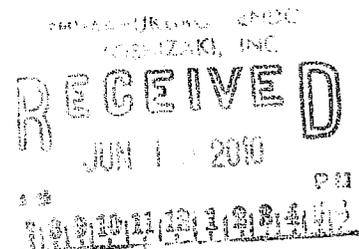
Subject: Pre-Consultation for Carlos Long Street Drainage Improvements

This responds to your June 1, 2010 letter, requesting consultation and comments on the preparation of a Draft Environmental Assessment (DEA) for the subject project.

We request the DEA include a traffic impact study. The DEA should also include a description of Public Transit that serves the area, and an assessment of the impact of your project on Public Transit during construction and as a result of the completed project. Basic information on Public Transit is available at: [www.thebus.org](http://www.thebus.org) and [www.honolulu.gov/dts](http://www.honolulu.gov/dts). For more details, you may contact our staff at 768-8370.

This project may affect bus routes, bus stops, and paratransit operations. Construction notes should include a paragraph that states: "The Contractor will notify the Department of Transportation Services, Public Transit Division at 768-8396 and Oahu Transit Services, Inc. (bus operations: 848-4578 or 848-6016 and paratransit operations: 454-5041 or 454-5020) of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project at least two weeks prior to construction."

Construction should be phased only to the extent that can be completed during a day, and shall be done during off-peak hours (approximately 8:30 AM to 4:00 PM) to minimize the impact on the surrounding neighborhood. Traffic control plans should be prepared for each phase of work and submitted to our department for approval.



Dr. Howard K. Endo, Ph.D., P. E.  
Page 2  
June 14, 2010

Thank you for the opportunity to review this matter. Our department reserves further comment pending our review of the traffic impact study.

Should you have any further questions on the matter, you may contact Mr. Brian Suzuki of my staff at 768-8349.

Very truly yours,

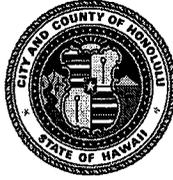
A handwritten signature in black ink, appearing to read "Wayne Y. Yoshioka", written in a cursive style.

Wayne Y. Yoshioka  
Director

HONOLULU FIRE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

636 South Street  
Honolulu, Hawaii 96813-5007  
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

MUFI HANNEMANN  
MAYOR

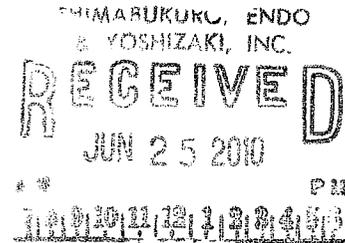


KENNETH G. SILVA  
FIRE CHIEF

ROLLAND J. HARVEST  
DEPUTY FIRE CHIEF

June 22, 2010

Mr. Howard Endo, Ph.D., P.E.  
President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715



Dear Mr. Endo:

Subject: Environmental Assessment  
Carlos Long Street Drainage Improvements Project

In response to your letter dated June 1, 2010, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the information provided and has no objections to the proposed project.

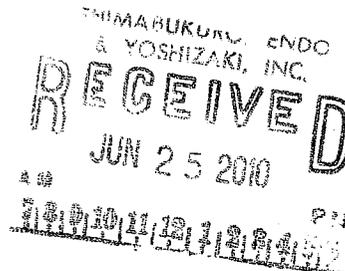
Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,

A handwritten signature in cursive script that reads "Kenneth G. Silva".

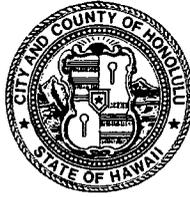
KENNETH G. SILVA  
Fire Chief

KGS/GL:bh



POLICE DEPARTMENT  
CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813  
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulu-pd.org



MUFI HANNEMANN  
MAYOR

LOUIS M. KEALOHA  
CHIEF

DELBERT T. TATSUYAMA  
RANDAL K. MACADANGDANG  
DEPUTY CHIEFS

OUR REFERENCE DMK-DK

June 9, 2010

Howard K. Endo, Ph.D., P.E., President  
Shimabukuro, Endo & Yoshizaki, Inc.  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Dr. Endo:

This is in response to your letter of June 1, 2010, requesting comments on a Pre-Consultation, Draft Environmental Assessment, for the Carlos Long Street Drainage Improvements project in Palolo Valley.

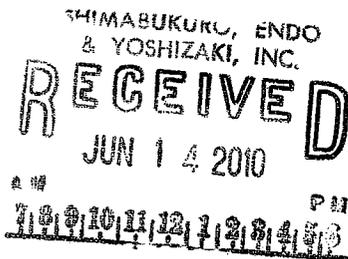
This project should have no significant impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Evan Ching of District 7 at 529-3362.

Sincerely,

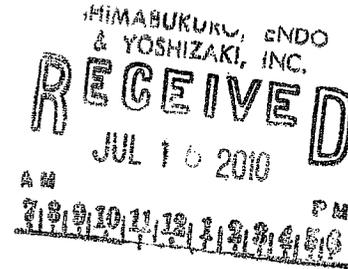
LOUIS M. KEALOHA  
Chief of Police

By   
DAVE M. KAJIHIRO  
Assistant Chief of Police  
Support Services Bureau





STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
KULA KAIAPUNI 'O ANUENUE  
2528 10<sup>th</sup> AVENUE  
HONOLULU, HAWAII 96816



July 14, 2010

Dr. Howard K. Endo, President  
Shimabukuro, Endo & Yoshizaki, Inc.  
Civil, Environmental & Structural Engineers  
1126 12<sup>th</sup> Avenue, Room 309  
Honolulu, Hawaii 96816-3715

Dear Dr. Endo:

Here are our pre-assessment comments about the affects of the Carlos Long Street Drainage Improvements Project on Anuenue School:

1. Anuenue School is the DOE's K-12 Hawaiian Language Immersion School on O`ahu. Initially, there are concerns for the physical facilities along the Pukele Stream. There are a portable classroom, a portable restroom, aquaculture tanks, and a work and storage building.

2. Perpetuating the Hawaiian language and cultural activities are the purposes of the school. Specifically, there are taro patches along the bank of the Pukele Stream. These are viewed as an important learning environment. Protecting the taro patches are deemed as a major concern.

3. Because taro raising is an integral part of the curriculum, many teachers and students devote much time in the patches. The safety of those who study and work in the taro patches need to be protected.

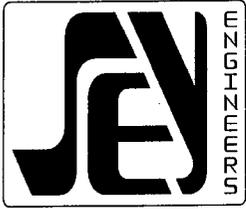
4. In addition to protecting the facilities and people at the school, protecting the land is an attendant concern. Adding to the water flow in the upper portion of the stream above the school also raises the concern for catastrophic erosion.

Thank you for your consideration of our concerns. Please let me know if you need more information.

Sincerely,

A handwritten signature in black ink that reads "Charles V. Naumu". The signature is written in a cursive style with a large, sweeping initial "C".

Charles V. Naumu  
Principal



**SHIMABUKURO, ENDO & YOSHIZAKI, INC.**

*Civil, Environmental & Structural Engineers*

1126 12<sup>th</sup> Avenue, Room 309

Honolulu, Hawaii 96816-3715

Ph.: (808) 737-1875 Fax: (808) 734-5516

E-Mail: seyeng@lava.net

**CONVERSATION CONFIRMER**

Date: 7/7/2010

Time: 3:40

By: Sharon Oshiro

Project: Carlos Long Pre-Assessment Letter

Job No.:

TELEPHONE CALL

COMPANY:

OFFICE MEETING

NAME: Mrs. Jane Fukunaga

OTHER

TEL. NO.:

SUBJECT:

Will be calling again when she returns from the mainland, on or about August 2. She wants to know why only people on Carlos Long will be assessed. She wants better maintenance of the drains.

Jane Fukunaga  
Property Owner TMK: 3-4-25:10  
2469 Myrtle St.  
Honolulu, HI 96816

ACTION:

DISTRIBUTION: