Department of Water
County of Kaua'i

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

September 1, 2011

Mr. Gary Hooser, Director
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment for
Department of Water, Lihue Baseyard Improvements
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Hooser:

The County of Kauai, Department of Water (DOW) has reviewed the Draft Environmental Assessment (DEA) for the subject project and anticipates a Finding of No Significant Impact. The DEA has been prepared pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 11-200, Hawaii Administrative Rules. Please publish notice of this DEA in the September 23, 2011 issue of OEQC's *The Environmental Notice*.

We have enclosed one (1) each the following items:

- Hardcopy of the OEQC publication form and DEA; and
- CD including the DEA and OEQC publication form in pdf format.

Please contact Mr. Dustin Moises of our department at (808) 245-5400 or dmoises@kauaiwater.org if you have any questions.

Sincerely,

David Craddick, P.E.
Manager and Chief Engineer

Attachments (by others)

cc: Mr. Earl Matsukawa, Wilson Okamoto Corporation
Mr. Charles Chan, Architects Hawaii, Ltd.

4398 Pua Loke St., P.O. Box 1706, Lihue, HI 96766 Phone: 808-245-5400
Engineering and Fiscal Fax: 808-245-5813, Operations Fax: 808-245-5402, Administration Fax: 808-246-8628

Publication Form
The Environmental Notice
Office of Environmental Quality Control

Instructions: Please submit one hardcopy of the document along with a determination letter from the agency. On a compact disk, put an electronic copy of this publication form and a PDF of the EA or EIS. Mahalo.

Name of Project: Department of Water, Lihue Baseyard Improvements

Applicable Law: Chapter 343, Hawaii Revised Statutes and Chapter 11-200-2, Hawaii Administrative Rules

Type of Document: Draft Environmental Assessment

Island: Kauai

District: Lihue

TMK: N/A – Known as parcel N-1-A

Permits Required:

State of Hawaii

- Department of Health
  - National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Stormwater Activities
  - Noise Variance Permit
- Disabilities Communications and Access Board (DCAB)
  - Review pursuant to the American with Disabilities Act Accessibility Guidelines (ADAAG)

County of Kauai

- Department of Planning
  - Use Permit
  - Class IV Zoning Permit
  - Grading Permit
  - Building Permit

Name of Applicant or Proposing Agency:	County of Kauai Department of Water
Address	4398 Pua Loke Street
City, State, Zip	Lihue, Hawaii 96766
Contact and Phone	Mr. Dustin Moises 808.245.5400

Approving Agency or Accepting Authority:	County of Kauai Department of Water
Address	4398 Pua Loke Street
City, State, Zip	Lihue, Hawaii 96766
Contact and Phone	Mr. Dustin Moises 808.245.5400

Consultant Wilson Okamoto Corporation

Address	1907 South Beretania Street, Suite 400
City, State, Zip	Honolulu, Hawaii 96826
Contact and Phone	Earl Matsukawa 946.2277

Project Summary: Summary of the direct, indirect, secondary, and cumulative impacts of the proposed action (less than 200 words).

The County of Kauai, Department of Water (DOW) proposes to develop a new 17,000 square foot Administration Building to house DOW's Lihue Baseyard's current and future functions and operations through the year 2050 as well as a future Department of Public Works storage building on a 2.30 acre remnant piece of land, adjacent to the existing DOW Lihue Baseyard.

Draft Environmental Assessment

DEPARTMENT OF WATER LIHUE BASEYARD IMPROVEMENTS

Lihue, Kauai, Hawaii

Prepared for:
County of Kauai
Department of Water

Prepared by:
Wilson Okamoto Corporation

September 2011

DRAFT
ENVIRONMENTAL ASSESSMENT

LIHUE BASEYARD IMROVEMENTS
District of Lihue, Kauai, Hawaii

Prepared For:

County of Kauai
Department of Water
4398 Pua Loke Street
Lihue, Hawaii 96766

Prepared by:

Wilson Okamoto Corporation
Engineers and Planners
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOA Job No. 8087-07

September 2011

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Appendix B *Traffic Impact Report, Department of Water Lihue Baseyard*, Wilson Okamoto Corporation. December 2010.

Appendix C Pre-Assessment Consultation Comment and Response Letters

PREFACE

This Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes, and Title 11, Chapter 200, Administrative Rules, Department of Health, State of Hawaii. The County of Kauai Department of Water (DOW) is proposing the Lihue Baseyard Improvements project in the Lihue District of the Island of Kauai. The project will use County funds and land to be conveyed from the County to the DOW.

The proposed project assessed herein is for the development of a new 17,000 square foot DOW Administration Building and future County Department of Public Works (DPW) Storage Building on a 2.30 acre remnant piece of land, adjacent to the existing DOW Lihue Baseyard. It is anticipated that a FONSI will be issued and filed with the State Office of Environmental Quality Control (OEQC) by the approving agency following public review of the Draft EA.

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SUMMARY

Proposing Agency:	County of Kauai Department of Water 4398 Pua Loke Street Lihue, Hawaii 96766 Contact: Mr. Dustin Moises
Accepting Agency:	County of Kauai Department of Water 4398 Pua Loke Street Lihue, Hawaii 96766 Contact: Mr. Dustin Moises
Authorized Agent:	Wilson Okamoto Corporation 1907 S. Beretania Street, Suite 400 Honolulu, Hawaii 96826 Contact: Mr. Earl Matsukawa, AICP
Project Location:	Lihue, Lihue District, Kauai, Hawaii
Tax Map Key:	N/A – Known as Parcel N-1-A
Area:	9.13 Acres
Existing Use:	Undeveloped
State Land Use Designation:	Urban
County Zoning Designation:	Open
Lihue Development Plan Designation:	Urban Center
Proposed Action:	Construction of a new 17,000 square foot administration building which will house the Department of Water Lihue Baseyard's current and future functions and operations through the year 2050 as well as a future Department of Public Works storage building.
Impacts:	No significant impacts are anticipated. The proposed project will allow the Department of Water to upgrade and expand its facilities to meet its current and future operational demands.
Anticipated Determination:	Finding of No Significant Impact (FONSI)

Parties Consulted During Pre-Assessment:

Federal
U.S. Geological Survey
U.S. Fish and Wildlife Service
U.S. Natural Resources Conservation Service
U.S. Federal Highway Administration

State
Department of Agriculture
Department of Business, Economic Development, and Tourism (DBEDT)
Department of Hawaiian Homelands
Department of Health (DOH)
Clean Air Branch, DOH
Wastewater Branch, DOH
Department of Land and Natural Resources (DLNR)
Division of Forestry and Wildlife, DLNR
Division of State Parks, DLNR
Engineering Division, DLNR
Land Division, Kauai District, DLNR
State Historic Preservation Division, DLNR
Department of Transportation
Office of Hawaiian Affairs
University of Hawaii Environmental Center

County
Department of Parks and Recreation
Department of Planning
Department of Public Works
Transportation Agency
Fire Department
Police Department
Office of the Mayor

Other
County Council Chair Jay Furfaro

Utility Companies
Kauai Island Utility Cooperative (KIUC)
Hawaiian Telecom
The Gas Company

1. INTRODUCTION

1.1 Background

The existing Lihue Baseyard is located in Lihue, Kauai, midway between Lihue Town and Kukui Village Shopping Center. It occupies a 2.47 acre site identified as Tax Map Key (TMK) 3-8-5: 013.

The baseyard includes of four buildings and an open court yard (see Figure 1-1). The Administration Building houses the administration, business and engineering operations of the DOW and is open to the public for business transactions. The Operations Building houses the Operations Division offices, machine shops, equipment and parts storage, employee locker and shower rooms, and general storage. The Micro Lab houses to DOW's laboratory on the first floor and a board room, information technologies (IT) room, and multi-purpose spaces on the second floor. The garage is used for truck parking and equipment storage. The open court is used primarily for baseyard operations, including employee and truck parking, operation staging and loading, and shelter for fuel tanks and generators.

The recent widening of the Kaumualii Highway from a two-lane road to a four-lane divided highway resulted in the closure of the Pua Loke Road on-ramp which is adjacent to the DOW baseyard. The deactivated Pua Loke Road on-ramp right-of-way and adjacent remnant land are known as Parcel N-1.

The availability of Parcel N-1 for other uses has prompted the DOW to seek acquisition of a 2.30-acre portion of Parcel N-1, known as Parcel N-1-A. DOW's intent is to consolidate it with the existing 2.47-acre Lihue Baseyard. The combined 4.77-acre site would be large enough to serve the Baseyard's current and future operational space needs.

Photo 1: Existing Administration Building

Photo 2: Operations Building

Photo 3: Micro Lab Building

Photo 4: Garage Building

Source: County of Kauai, Department of Water. *Lihue Baseyard Improvements Phase 1 Master Plan (Draft)*. April 2011

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Lihue Baseyard Improvements

EXISTING DEPARTMENT OF WATER LIHUE BASEYARD

FIGURE

1-1

2. PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The proposed project site is located on a triangular shaped 2.30 acre portion of Parcel N-1, also known as parcel N-1-A, adjacent to the existing Lihue Baseyard in Lihue, Kauai, Hawaii (see Figure 2-1 and 2-2). Parcel N-1-A contains a portion of the right-of-way of the deactivated Pua Loke on-ramp as well as an adjacent piece of remnant land. Existing access to the project site is provided by Pua Loke Street.

2.2 Existing Uses

The proposed project site is currently undeveloped with a few clusters of large trees located near the middle of the site (see Figure 2-3).

2.3 Surrounding Uses-

The project site is in close proximity to the Lihue Town as well as the Kukui Grove commercial and residential developments. The project site is bounded by the Kaumualii Highway to the north, by the Pua Loke Road on-ramp and Kuhio Grove Village office complex to the southwest, and the existing baseyard to the east (see Figure 2-4).

2.4 Project Need and Objectives

The existing County of Kauai Department of Water (DOW) Lihue Baseyard is fully developed and densely staffed with little opportunity for expansion or new development without demolishing the existing buildings. The existing 7,755 square foot Administration Building, which supports 36 staff positions, represents a little more than half of the 14,589 square feet of administrative space and 50 staff positions programmed to meet current operational demand. Projections to Year 2050 and beyond indicate a need for 17,560 square feet of administrative spaces and 59 staff positions.

In addition, the operation yard, maintenance shops, staging areas and storage spaces all need to correspondingly increase to meet operational demands. The total space needs projected for the Year 2050 for the entire baseyard is 50,585 square feet. A comparison of this projected space needs with the existing space inventory of 33,025 square feet reveals a space deficit of 35% in the DOW's Lihue Baseyard Facilities in the Year 2050.

2.5 Project Description

The DOW is proposing to develop a 17,000 square foot new Administration Building and future County Department of Public Works (DPW) Storage Building on a 2.30 acre site to be conveyed from the County to the DOW and consolidated with the existing 2.47 acre Lihue Baseyard in Lihue, Kauai. The new Administration Building is planned to accommodate DOW Lihue Baseyard's current and future functions and operations through the year 2050, including parking, loading and staging areas. The new Storage Building would be constructed in a later phase (see Figure 2-5).

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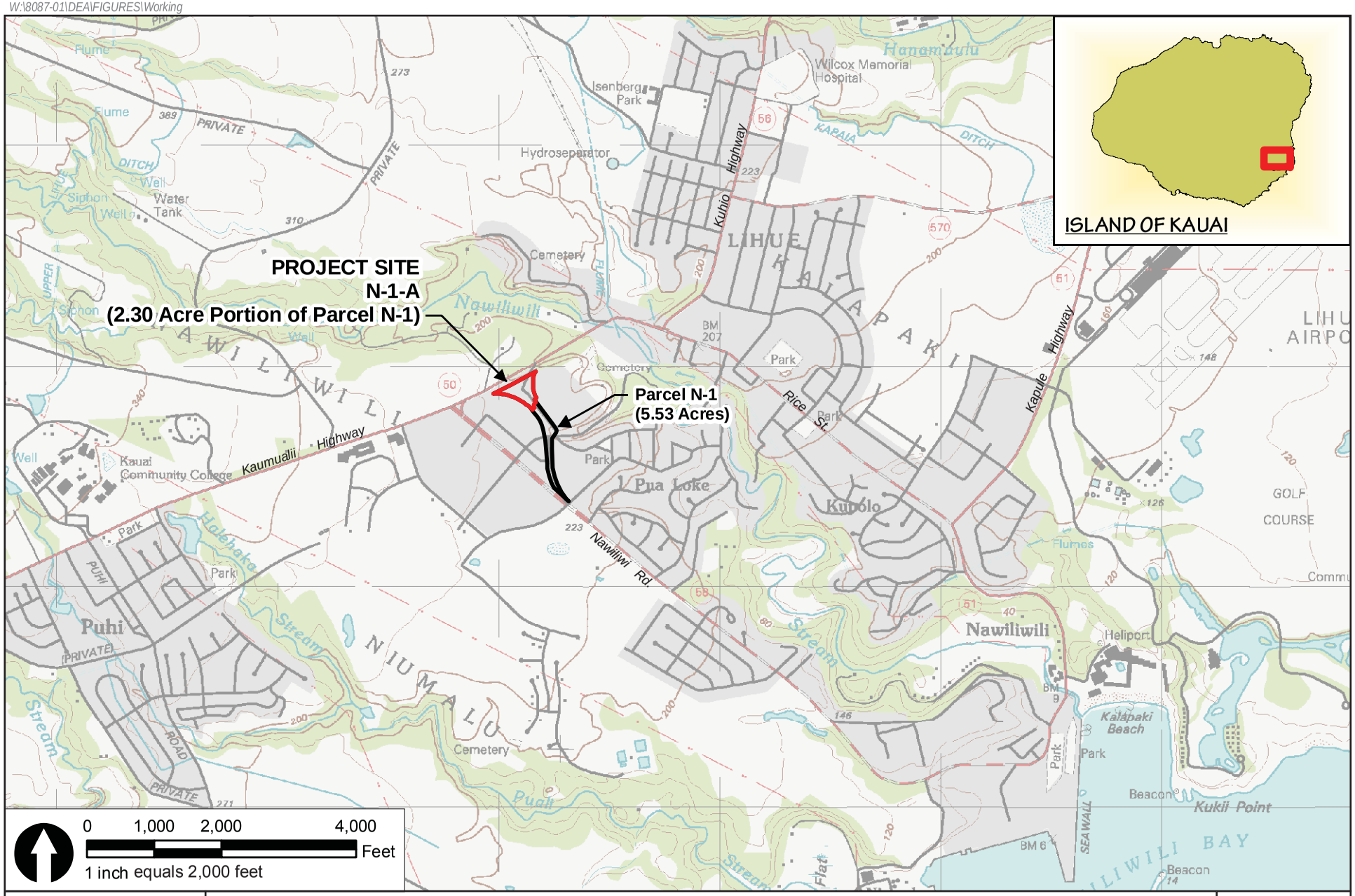

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LOCATION MAP

FIGURE 2-1

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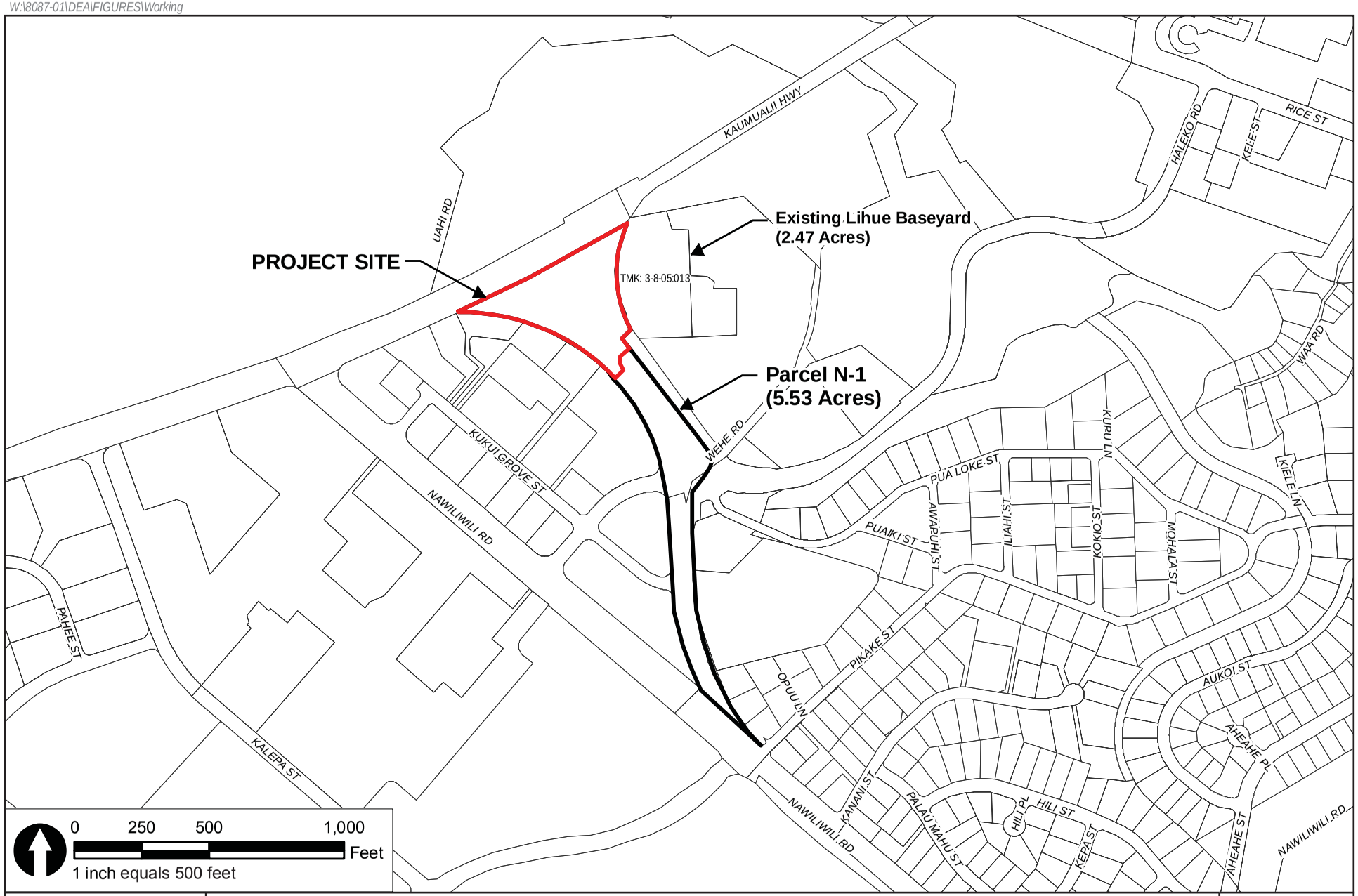

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TAX MAP KEY

FIGURE 2-2

Photo 1: View looking north towards Kaumualii Highway.

Photo 2: View looking east towards existing Department of Water Lihue Baseyard.

Photo 3: View looking south towards Kukui Grove Village.

Photo 4: View looking west towards Kukui Grove Village.

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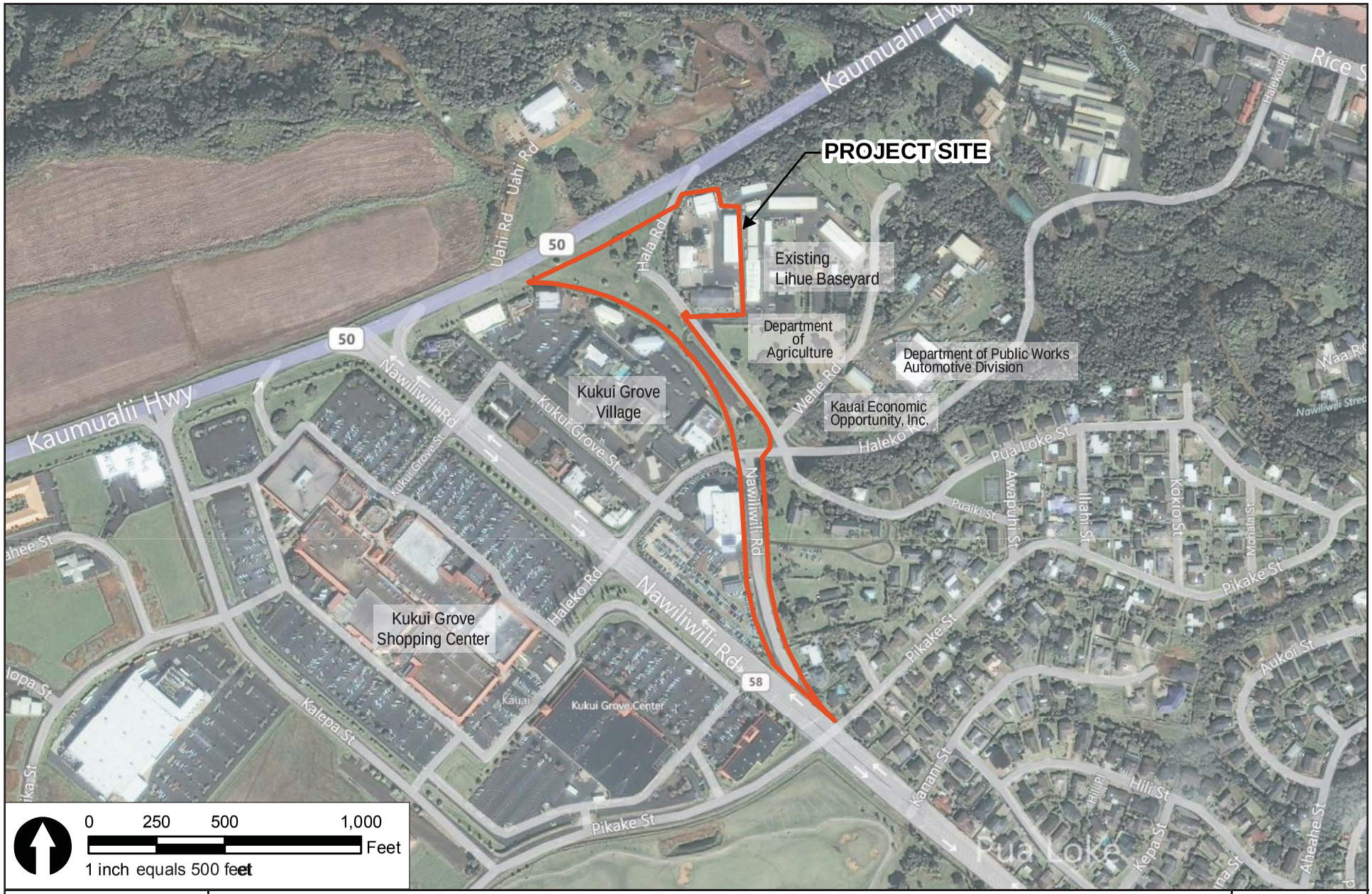
PROJECT SITE PHOTOS

FIGURE

2-3

W:\8087-01\DEA\FIGURES\Working



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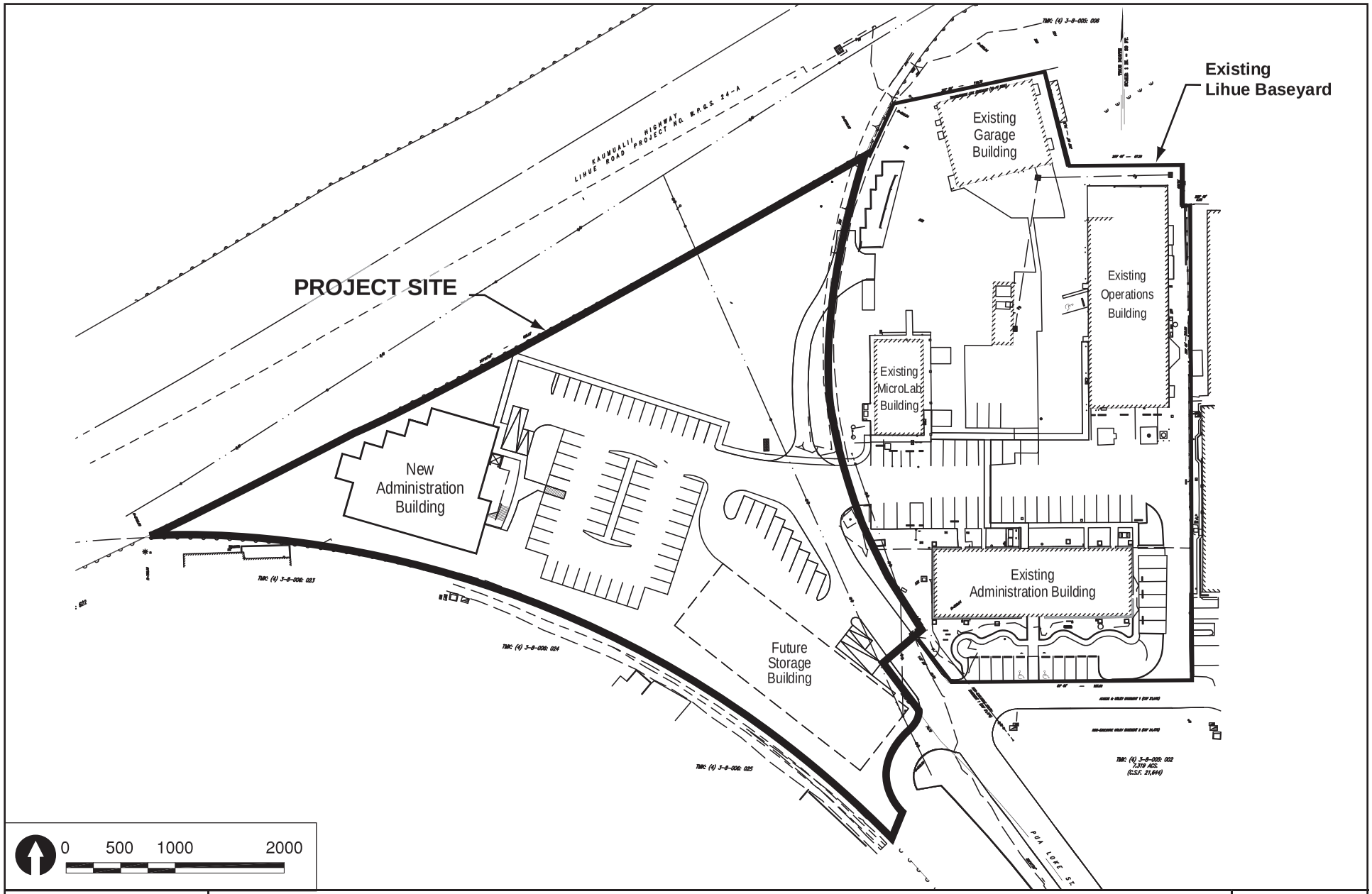
SURROUNDING USES

FIGURE 2-4



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Lihue Baseyard Improvements

SITE PLAN

FIGURE

2-5

The new Administration Building will be located on the western portion of the project site and is designed to be two stories high. The ground floor will house the DOW's Fiscal, Water Resources and Planning, Construction Management, and Engineering Divisions that deal with the public on a daily basis. A public lobby, conference room, library and other support facilities complete this floor. The second floor will houses DOW's Administration and a Multi-purpose/Board Room which deal with the public in a limited fashion. An Information Technologies (IT) room, staff break room and other support facilities complete this floor. A passenger elevator, two stairways and a through-the-floor opening will connect the two floors. The two floors will be illuminated with natural light from skylights or clearstories.

54 at-grade parking stalls and 2 loading stalls are planned for the new DOW Administration Building. Approximately 12 parking stalls will be allotted for visitors and 42 stalls for employees. The 10 vacated visitors parking stalls in the front of the existing Administration Building can be reassigned to employee parking for a total of 52 employee parking stalls. In addition, a few employee parking stalls can be added to the existing baseyard should the need arise.

The future DPW Storage Building will be located on the southern portion of the project site, across the at-grade parking from the new Administration Building. This building is anticipated to have a ground floor of approximately 11,000 square feet and a mezzanine floor of approximately 5,500 square feet. An additional at-grade parking is planned for the area directly north of the Storage Building. Utility stub-outs for the future DPW Storage Building will be constructed with the new DOW Administration Building, including those for water, sewer, and electrical.

A portion of the decommissioned Hala Road will be reconstructed into a new 24 foot road to provide access to the proposed project site, as well continue to provide access to the existing baseyard. This road would accommodate all vehicles including trucks, fire trucks and emergency vehicles. Walkways will be provided alongside the parking area to connect the new developments to the existing base yard.

The existing Administration Building and Operations Building are connected to an aerobic treatment system which uses a seepage pit for effluent disposal while the Micro Lab Building is connected to a septic tank and leaching field for effluent disposal. Both of these systems are currently at full capacity, therefore a new sewage treatment system is needed for the proposed project. DOW is seeking to create a new sewer connection to the existing Grove Farm sanitary sewer system in Pua Loke Street, just beyond Haleko Road. This option would require approval from Grove Farm for the sewer connection and the construction of approximately 1,200 linear feet of 8-inch gravity sewer line. This sewer connection would serve both the proposed project and the existing baseyard which would allow the existing system to be decommissioned.

A new 8-inch waterline is needed to connect to an existing 10-inch waterline for domestic water, fire hydrant, and fire sprinkler connections. A new water meter and backflow preventer will be needed for this new waterline.

Stormwater runoff will be directed away from the project site either into the landscaped areas or an underground water retention system within the site.

2.6 Project Schedule and Cost

The project cost is estimated at $7.26 million which includes the new DOW Administration Building, at-grade parking, access road, landscape, utility and off-site sewer connection to the Grove Farm sewer system and an allowance of $300,000 for furnishings, equipment, and signage.

The construction for the planned future DPW Storage Building and associated site work, parking and loading is not included in this cost estimate except for electricity, water and sewer stub-outs to the site.

3. DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS AND MITIGATION MEASURES

The following is a description of the existing environment, assessment of potential impacts and proposed measures to mitigate potential adverse impacts resulting from the proposed project.

3.1 Climate

The climate in Lihue, Kauai is characterized as tropical. The average annual mean temperature in the Lihue area is 73 degrees Fahrenheit (F). The prevailing trade winds flow from northeast to southwest. The Lihue area has an average annual rainfall ranging between 40 to 60 inches.

Impacts and Mitigation Measures

No short- or long-term significant impacts on climate in the project area are anticipated. The proposed project is not anticipated to affect temperatures, wind, or rainfall levels in the project area.

3.2 Geology, Topography and Soils

Geology: Kauai is the oldest and most northwesterly of the eight main Hawaiian Islands. The island is made up largely of a huge basaltic shield volcano, which has the largest central caldera in the Hawaiian Islands. The caldera of the shield volcano is ovoid (egg-shaped), approximately 12 miles long northeast-southeast, and 10 miles wide northwest-southwest. The Island still has the roughly circular outline of the original circular dome, even though it has been profoundly affected by collapse, faulting, erosion, and later volcanism.

Kauai was formed by two major lava flows. The Waimea volcanic series refers to the flows that formed the original volcanic shield and caldera of the island. The Koloa volcanic series refers to subsequent flows that overlaid much of the Waimea volcanic series formations on the lower slopes of the island. The rocks on Kauai are all volcanic, except for minor amounts of sediments derived from volcanic rocks by erosion, and a narrow, discontinuous fringe of calcareous reef and beach deposits.

Topography: The topography of the project site slopes mildly from west to east and steeply from the middle to the northeast corner where the former Pua Loke Road on-ramp intersects with Kaumualii Highway.

Soils: According to the U.S. Department of Agriculture Natural Resources Conservation Service, the project site is comprised of soils within the Lihue series (see Figure 3-1).

The Lihue series consists of well drained soils found on uplands at elevations from nearly sea level to 800 feet with gently sloping to steep slopes. The soils are formed in material weathered from basic igneous rock. Lihue soils are used for irrigated sugar cane and pineapple cultivation, pasture, orchards, truck crops, woodland, wildlife habitat, and homesites. The natural vegetation consists of lantana, guava, joee, guineagrass, kikuyugrass, molassesgrass, koa haole, and Java plum.

The Detailed Land Classification – Island of Kauai published by the University of Hawaii Land Study Bureau (LSB) evaluates the quality or productive capacity of certain lands on the island for selected crops and overall suitability in agricultural use. A five-class productivity

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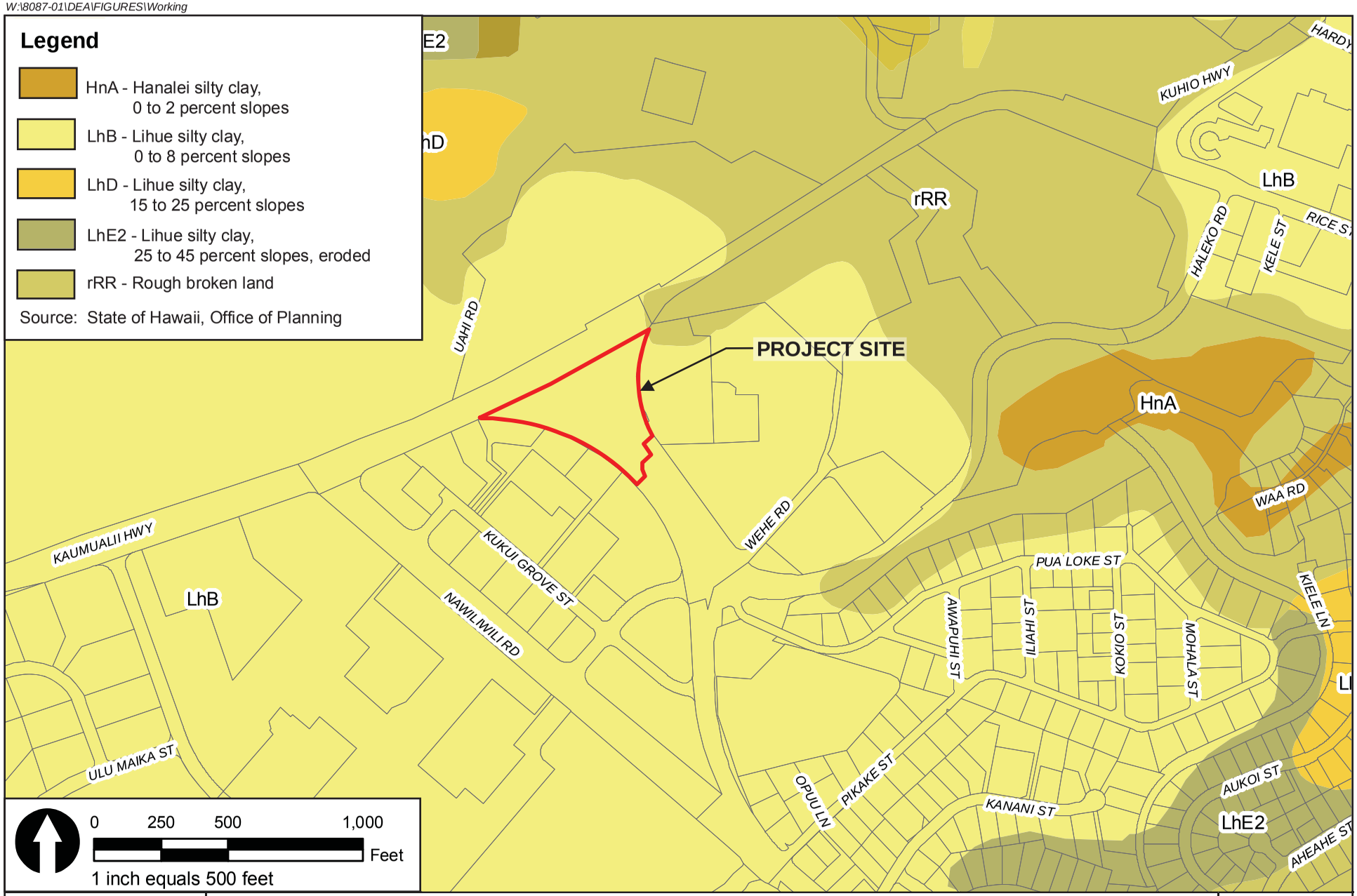

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Lihue Baseyard Improvements

SOILS MAP

FIGURE 3-1

system was established with "A" representing the class of highest productivity and "E" the lowest. The productivity ratings were based on statewide standards of crop yields and levels of management at the time the classification was made. The project site is not classified (see Figure 3-2).

The State Department of Agriculture's Agricultural Lands of Importance in the State of Hawaii (ALISH) classify lands into four agricultural types, Prime Lands, Unique Lands, Other Lands, and Unclassified. The majority of the proposed project site is classified as "Prime Lands" (see Figure 3-3). The eastern portion of the proposed project site is not classified.

Impacts and Mitigation Measures

No long-term significant impacts on geology, topography, and soils are anticipated during the construction and operation of the proposed project.

In the short-term, excavation and grading activities associated with construction of the proposed project will be regulated by the County's grading ordinances and the National Pollutant Discharge Elimination System (NPDES) permit requirement administered by the State Department of Health (DOH).

An NPDES General Permit for Storm Water Associated with Construction will be required for the project, as the area of soil disturbance from activities such as clearing, grubbing, grading, and stockpiling will exceed one acre. In conjunction with the NPDES permit, a Best Management Practices (BMP) plan will be prepared for construction activities within the project site. Erosion and sediment control migtigation measures that are typically included in the BMP plan are appropriately stockpiling materials on-site to prevent runoff, covering or stabilizing topsoil stockpiles, use of sediment basins and sediment traps, and establishing re-vegetation or landscaping as early as possible on completed areas.

Following construction, exposed soils at the project site will have been built over, paved over, or re-vegetated to control erosion.

3.3 Hydrology

3.3.1 Ground Water

The State Department of Land and Natural Resources (DLNR), Commission on Water Resource Management (CWRM) has established surface water hydrologic units and coding system for surface water resource management. The proposed project site is located within the Lihue Aquifer Sector Area which is comprised of five Aquifer System Areas identified as Kilauea, Anahola, Wailua, Hanamaulu, and Koloa. The project site is located within the Hanamaulu Aquifer System (20102) area which has a total area of 55 square miles and extends from the Wailua drainage divide in the north to the Haupu Ridge in the south and from the Hanapepe drainage divide in the west to the coast in the east.

The Hanamaulu Aquifer System yields 36 million gallons per day (mgd). The aquifer is predominantly composed of high-level aquifers perched on beds of weathered soil, ash, and dense lavas and constrained at high levels by the relatively low permeability of the aquifer. The aquifer experiences annual rainfall of 83 inches. The aquifer also consists of basal groundwater contained deep below the surface in Koloa lava formations near the coast.

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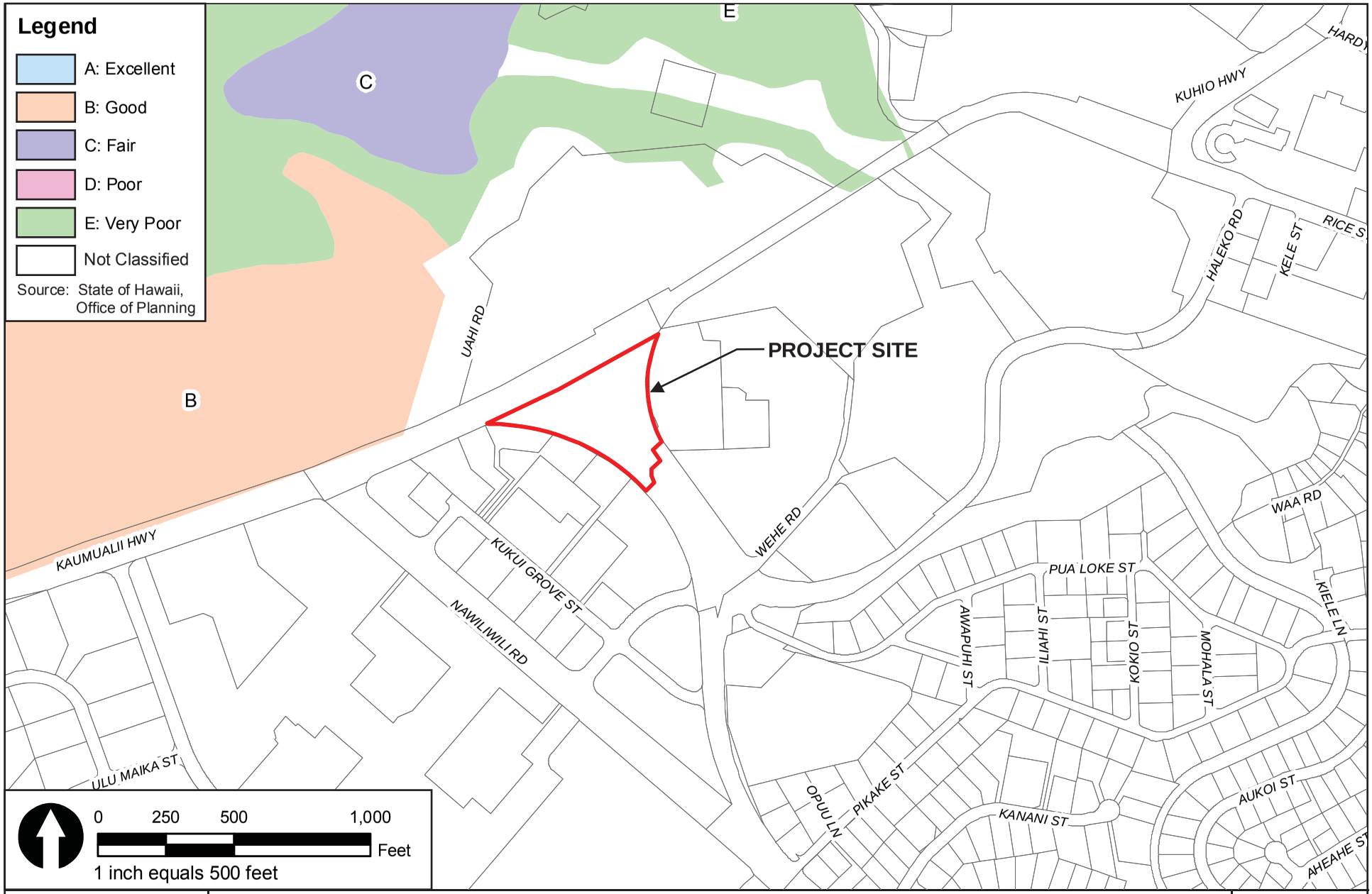

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Lihue Baseyard Improvements

DETAILED LAND CLASSIFICATION

FIGURE 3-2

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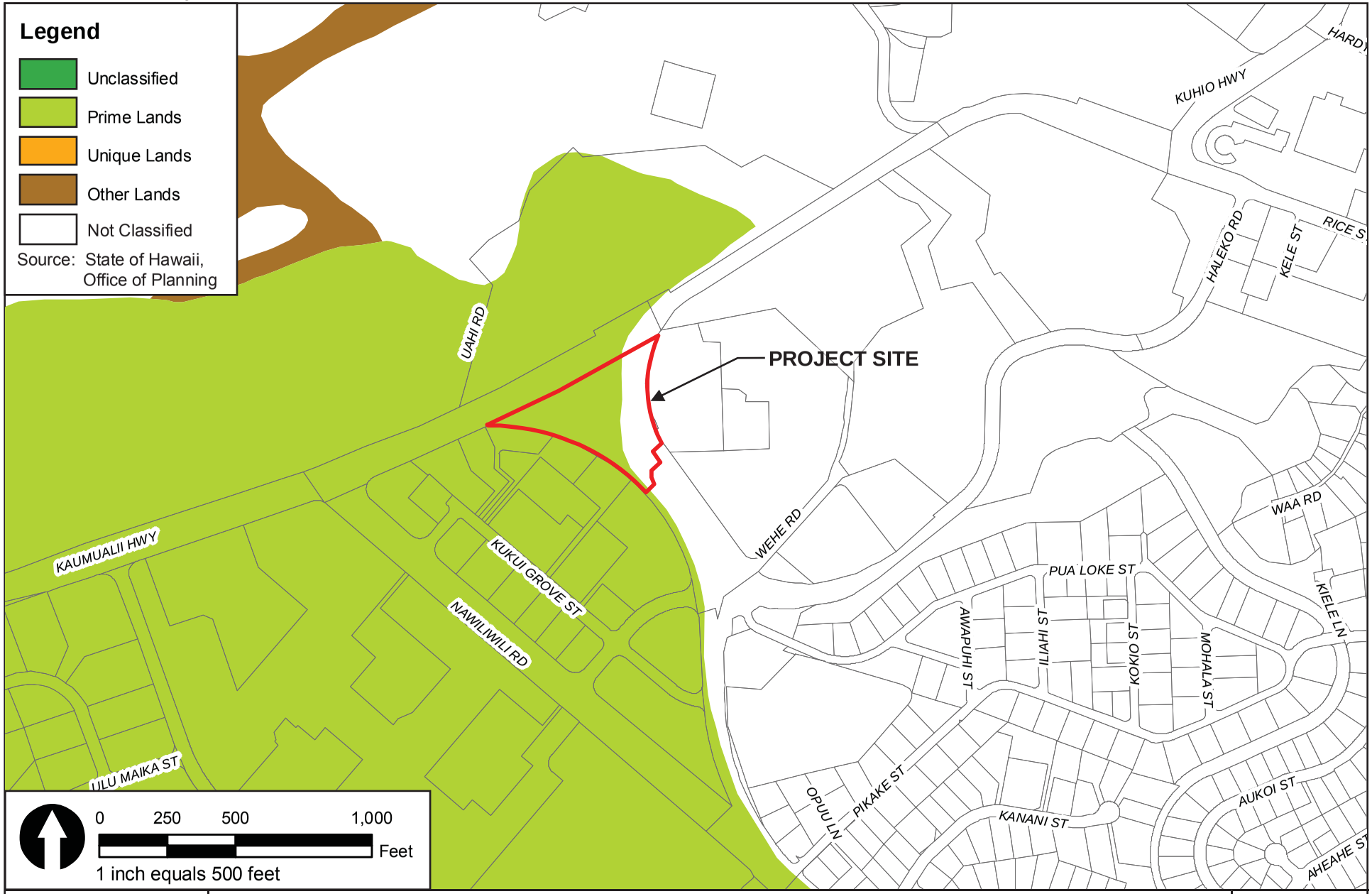

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Lihue Baseyard Improvements

AGRICULTURAL LANDS OF IMPORTANCE IN THE STATE OF HAWAII MAP

FIGURE 3-3

The project site is also located on the Nawiliwili Bay unified watershed, one of the five "Category I/Priority Watersheds" identified by the DOH as in need of watershed restoration.

Impacts and Mitigation Measures

No short- or long-term significant impacts to groundwater resources associated with the project site are anticipated during construction or operation of the proposed project. Construction activities are not likely to introduce to, nor release from the soil any materials which could adversely affect groundwater. Construction material wastes will be appropriately disposed of to prevent leaching. Dewatering activities are not anticipated for this project.

3.3.2 Surface Waters

The project site is located approximately 0.3 miles southwest of Nawiliwili Stream and a riverine wetland (see Figure 3-4).

Nawiliwili Stream is a perennial stream located north of the project site that flows southeast to Nawiliwili Bay. The upper reaches of the stream consists of a north and a south tributary that flow through undeveloped former sugarcane land. The middle reach of the stream is a small, shallow, slow-flowing stream that begins on the slopes of Kilohana Crater where the north and south tributaries converge. The middle reach flows through mostly open land which is primarily agricultural and low density residential. The lower reach of Nawiliwili Stream flows through a steeply incised gulch and onto the coastal plain before discharging into Nawiliwili Bay at the west end of Kalapaki Beach.

In general, wetlands are determined by the presence of two of the following three conditions: 1) hydrology; 2) hydric soils; and/or 3) wetland vegetation. The National Wetlands Inventory Maps identified one riverine system which encompasses 5.98 acres. It is an upper perennial with an unconsolidated bottom and is permanently flooded.

Both surface water features feed into a large wetland area approximately one mile to the southeast of the project site.

Impacts and Mitigation Measures

No long-term significant impacts to surface waters located near or within the project site are anticipated during construction or operation of the proposed project as the project will not alter existing streams or drainage patterns associated with any perennial streams in the project vicinity.

In the short-term during construction, stormwater runoff may carry increased amounts of sediment into the storm drain system and streams due to erosion from exposed soils during excavation and grading activities. Such activities will be regulated by the County's grading ordinances and the NPDES permit requirement administered by the DOH.

An NPDES General Permit for Storm Water Associated with Construction will be required for the project, as the area of soil disturbance from activities such as clearing, grubbing, grading, and stockpiling will exceed one acre. In conjunction with the NPDES permit, a Best Management Practices (BMP) plan will be prepared for construction activities within the project site. Erosion and sediment control migtigation measures that

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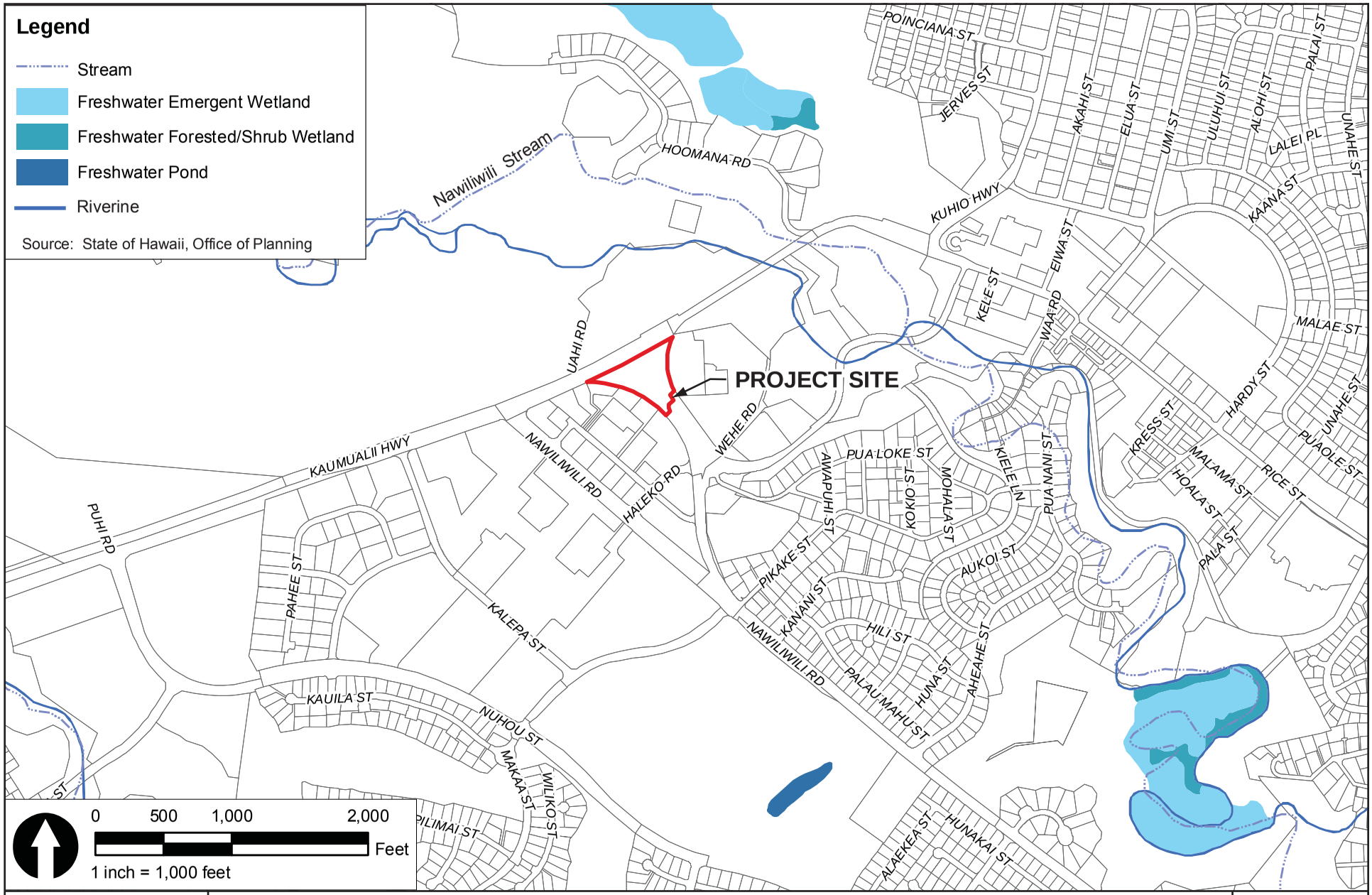

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SURFACE WATER MAP

FIGURE 3-4

are typically included in the BMP plan are appropriately stockpiling materials on-site to prevent runoff, covering or stabilizing topsoil stockpiles, use of sediment basins and sediment traps, and establishing re-vegetation or landscaping as early as possible on completed areas.

Following construction, exposed soils at the project site will have been built over, paved over, or re-vegetated to control erosion. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

3.3.3 Coastal Waters

The coastal water offshore of the project site is Nawiliwili Bay which is located approximately 2.15 miles to the southeast. The State DOH classifies this coastal water as Class A. The objective of this class is that "their use for recreational purposes and aesthetic enjoyment be protected. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class." (Water Quality Standards, Title 11, Chapter 54, Hawaii Administrative Rules).

Impacts and Mitigation Measures

No long-term significant impacts on coastal waters in the vicinity of the project area are anticipated during construction or operation of the proposed project.

In the short-term during construction, stormwater runoff may carry increased amounts of sediment into the storm drain system and streams due to erosion from exposed soils during excavation and grading activities. This runoff could potentially impact the water quality of coastal waters in the area. Excavation and grading activities associated with construction of the proposed project will be regulated by the County's grading ordinances and the NPDES permit requirement administered by the DOH.

An NPDES General Permit for Storm Water Associated with Construction will be required for the project, as the area of soil disturbance from activities such as clearing, grubbing, grading, and stockpiling will exceed one acre. In conjunction with the NPDES permit, a BMP plan will be prepared for construction activities within the project site. Erosion and sediment control migtigation measures that are typically included in the BMP plan are appropriately stockpiling materials on-site to prevent runoff, covering or stabilizing topsoil stockpiles, use of sediment basins and sediment traps, and establishing re-vegetation or landscaping as early as possible on completed areas.

Following construction, exposed soils at the project site will have been built over, paved over, or re-vegetated to control erosion. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

3.4 Flood Hazard

According to the Flood Insurance Rate Map (FIRM) (Community Panel Number 150020307E, Effective Date: September 16, 2005 and Panel Number 1500020326F, Effective Date: November 26, 2010) prepared by the Federal Emergency Management Agency (FEMA), the project site is located within Zone "X", defined as "Areas determined to be outside the 0.2% annual chance floodplain" (see Figure 3-5). The project site is located outside the tsunami inundation zone.

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Legend

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE AE Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

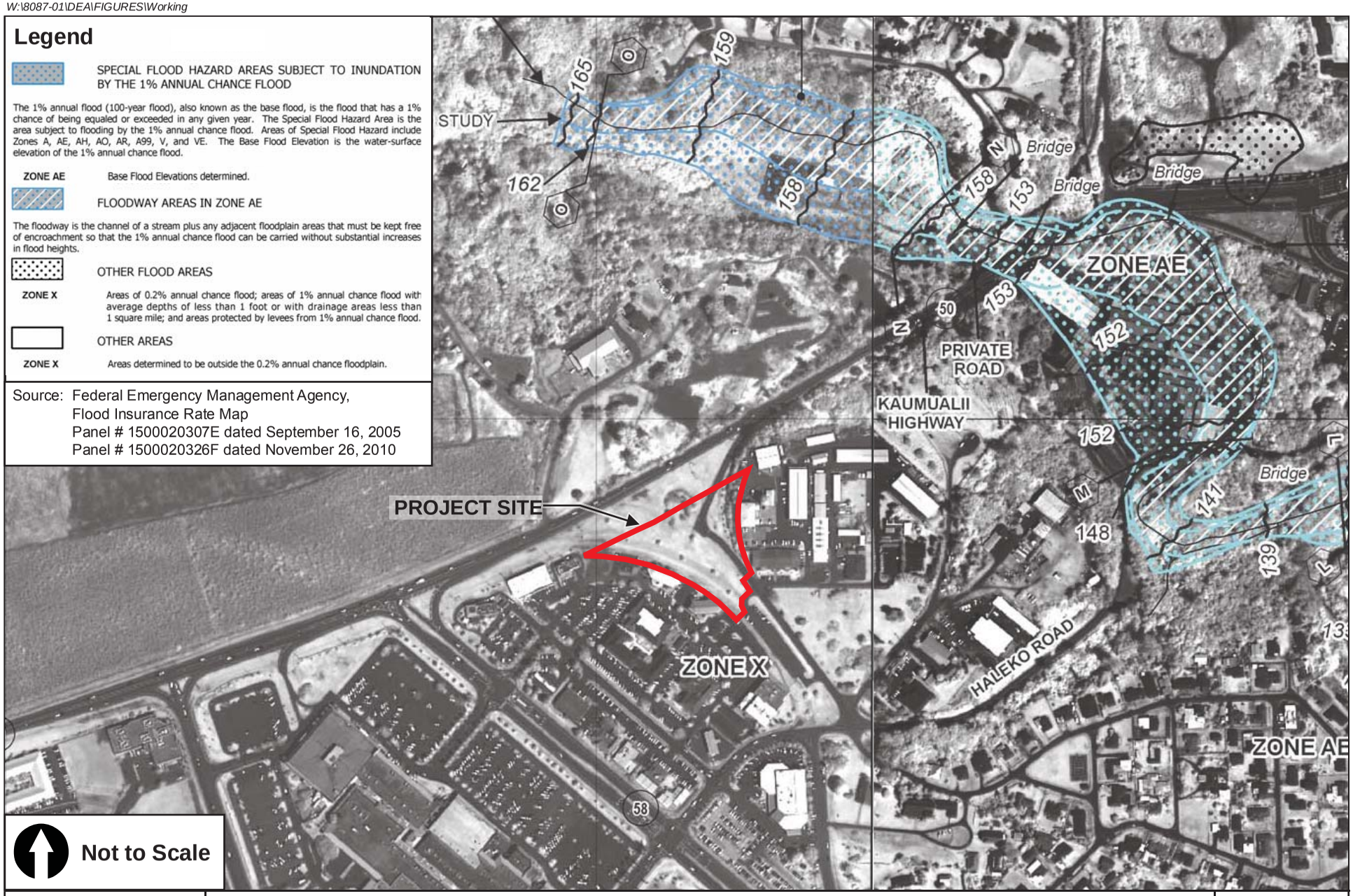
OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

Source: Federal Emergency Management Agency,
Flood Insurance Rate Map
Panel # 1500020307E dated September 16, 2005
Panel # 1500020326F dated November 26, 2010



Not to Scale

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FLOOD INSURANCE RATE MAP

FIGURE 3-5

Impacts and Mitigation Measures

No short- or long-term significant impacts on flood hazards are anticipated during construction and operation of the proposed project.

3.5 Flora and Fauna

3.5.1 Flora

There are no rare, threatened, or endangered flora species located within or adjacent to the project site. The project site is currently undeveloped and overgrown by various trees and grasses. The existing vegetation includes common plants and trees such as African Tulip (*Spathodea campanulata*), Kukui (*Aleurites moluccana*), Ficus, Plumeria (*Frangipani*), and Milo (*Thespesia populnea*); and, various weeds and grasses, such as guinea grass, Bermuda grass, swine cress, goose wiregrass, and thistle.

Impacts and Mitigation Measures

No short- or long-term significant impacts on flora species are anticipated due to construction and operation of the proposed project as there are no rare, threatened, or endangered flora species located within or adjacent to the project site.

3.5.2 Fauna

Based on concerns expressed in a letter from the U.S. Fish and Wildlife Service (USFWS) (see Appendix C), an avian and terrestrial mammalian survey was conducted on August 25, 2011 by Rana Biological, Inc. to assess avian and mammalian resources within the project area. The study is summarized below and the study is included as Appendix A.

Avian Resources

During the survey, a total of 29 individual birds, representing nine species, were recorded. All of the species detected are alien to the Hawaiian Islands. The most commonly recorded species was the Common Myna (*Acridotheres tristis*), which accounted for 32 percent of the total number of individual birds recorded.

No native avian species currently proposed for listing, or listed under either the Federal or the State endangered species statutes were detected on the site, including the Hawaiian goose, or Nene (*Branta sandvicensis)*, which was specifically mentioned in the USFWS letter.

Although not detected during the survey, the Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) have been recorded over-flying the project site between April and the end of November each year. Additionally, the Save our Shearwaters Program has recovered both species from the general project area on an annual basis over the past three decades.

The Hawaiian Petrel is listed as endangered, and the shearwater as threatened under both Federal and State endangered species statutes. The primary cause of mortality in both Hawaiian Petrels and Newell's Shearwaters is though to be the predation by alien mammalian species at the nesting colonies. Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawaii. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade

structures, and if they are not killed outright, the dazed or injured birds are easy targets for feral animals.

There are no nesting colonies nor appropriate nesting habitat for either of these listed species within or close to the project site.

Mammalian Resources

With the exception of the Hawaiian hoary bay (*Lasiurus cinereus semotus*), all terrestrial mammals currently found on the island of Kauai are alien species. While no Hawaiian hoary bats were recorded overflying the project site, they are widely distributed in the lowland areas of Kauai, and have been documented in and around almost all areas that still have some dense vegetation.

One terrestrial mammalian species was detected while on the site. Tracks of dogs (*Cani f. familiaris*), was encountered at several locations on the project site.

No mammalian species currently proposed for listing, or listed under either the Federal Endangered Species Act or the State endangered species statutes were detected on the site.

Although no rodents were detected during the survey, it is likely that the four established alien *muridae* found on Kauai, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rat (*Rattus exulans hawaiiensis*) use various resources found within the general project area. All off these introduced species of rodents are harmful to native ecosystems and the native faunal species dependant on those ecosystems.

Impacts and Mitigation Measures

No long-term significant impacts on fauna within the project site are anticipated during construction or operation of the proposed project as there are no rare, threatened, or endangered fauna species or critical habitats located within the project site.

In the short-term, the construction of the new Administration Building will require the removal of some of the existing plant species that provide a small habitat for various introduced avian and mammalian species that commonly occur in sub-tropical environments, however, when landscaping is completed, many of these displaced species are anticipated to return.

Construction activities during the clearing and grubbing phases of the project may potentially impact Hawaiian Hoary bats. The project site consists of four *kukui* trees, any of which a bat could potentially use as a day roost site, though given the lack of surrounding vegetation and the highly disturbed and urban nature of the site seem rather unlikely. It is recommended that the four trees not be cleared between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

In the long-term, the primary potential impact that the proposed project poses to the nocturnally flying Hawaiian Petrels and Newell's Shearwaters is the increased threat that individual birds will be downed after becoming disoriented by new exterior lighting associated with possible night-time construction activity, and structures that are built on the property. To reduce this possibility, all exterior lighting within the proposed project

will be shielded and/or directed downward to reduce the potential for interaction with exterior lights and man-made structures.
No nighttime construction is anticipated for the proposed project. All exterior lighting to be installed will be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures.

As there are no federally delineated Critical Habitat for any species present on or adjacent to the project site, the construction and operation of the proposed facility will have no impacts to federally designated Critical Habitat. There is no equivalent statue under State law.

3.6 Noise

Ambient noise in the project area is predominantly attributed to vehicular traffic traveling along Kaumualii Highway and adjacent roadways.

Impacts and Mitigation Measures

In the short-term, noise from construction activities such as excavation, grading, cutting, and paving will be unavoidable. The increase in noise level will vary according to the particular phase of construction. Noise may also increase as a result of operation of heavy vehicles and other power equipment during the construction period.

Construction noise impacts will be mitigated by compliance with provisions of the State DOH Administrative Rules, Title 11, Chapter 46, "Community Noise Control" regulations. These rules require a noise permit if the noise levels from constructions activities are expected to exceed the allowable levels stated in the DOH Administrative Rules. It shall be the contractor's responsibility to minimize noise by properly maintaining noise mufflers and other noise-attenuating equipment, and to maintain noise levels within regulatory limits. Also, the guidelines for 5 hours of heavy equipment operation and noise curfew times as set forth by the DOH noise control rules, will be adhered to; or if necessary, a noise permit will be obtained.

In the long-term, no significant impact noise impact is anticipated once the construction of the proposed project has been completed. Ambient noise levels in the vicinity will increase slightly as a result of the associated increase in vehicular traffic generated by the proposed project. Operation of the proposed project will generate slightly increased noise during business hours.

3.7 Air Quality

The State DOH operates several ambient air monitoring stations throughout the State. The pollutants monitored by the State are generally done on a regional level, and most of these stations are located at various sites on the island of Oahu. On March 21, 2011, the DOH installed the first air monitoring station on Kauai located at Hulemalu Road in Lihue. This station mainly measures particulate matter less than 2.5 microns. As the station is new, no data is currently available. In general, however, the *2009 Annual Summary Hawaii Air Quality Data* confirms that criteria pollutant levels remain below State and Federal ambient quality standards at all State and local air monitoring stations in the State.

Air quality in the vicinity of the project site is generally good with prevalent tradewinds blowing seaward through most of the year. Within the immediate vicinity of the project site, air quality is primarily affected by vehicular-related emissions in the form of carbon monoxide (CO) generated by traffic along Kaumualii Highway and other nearby roadways. Such CO levels, however, are unlikely to approach State and Federal standards given the relatively low volume of vehicular traffic and the site's exposure to winds.

Impacts and Mitigation Measures

In the short-term, there will be air quality impacts related to construction activities including fugitive dust generated by soil disturbance and emissions from construction vehicles and equipment and commuting construction workers. Potential air quality impacts during construction of the proposed project will be mitigated by complying with the State DOH Administrative Rules, Title 11, Chapter 60-11.1 "Air Pollution Control". Compliance with State regulations will require adequate measures to control fugitive dust by methods such as water spraying and sprinkling of loose or exposed soil or ground surface areas and dust-generating equipment during equipment. Exhaust emissions from construction vehicles are anticipated to have negligible impact on air quality in the vicinity as the emissions would be relatively small and readily dissipated.

In the long-term, no significant impacts on ambient air quality in the project area are anticipated. Air quality levels would be most affected by vehicular emissions in the form of CO generated by project-related traffic, although the increase would be marginal and relatively dissipated by exposure to winds. However, the elevated CO concentrations are anticipated to dissipate.

3.8 Historic Resources

An archaeological and historical assessment of the Kaumualii Highway Corridor was prepared by Cultural Survey's Hawaii (CSH) in conjunction with the *Improvements to Kaumualii Highway Final Environmental Assessment.* As the proposed project is located within the project limits of the aforementioned document, the findings from that survey are summarized below.

A historic background survey of the area was conducted for the Kaumualii Highway Improvements project. The survey included a study of historic maps, archival documents, and previous archaeological and historical studies of the project area. Fieldwork was also conducted to inspect and assess historic properties identified through archival and document research, and to find potentially new sites of significance.

Through their initial assessment, CSH identified four historic properties within the area of potential effects. These sites included the Grove Farm administrative office building, the Lihue Public Cemetery, The Lihue Mill Bridge, and the Hoomana Overpass Bridge. Consultation with the State Historic Preservation Division (SHPD) and the Kauai Historic preservation Review Commission assisted in identifying four additional historic properties which included the German Hill Historic District, Kilohana, a residence adjacent to Kilohana, and Lihue Mill. Of the eight listed sites, five are within the vicinity of the proposed project. These sites include the Lihue Public Cemetery, Lihue Mill, Lihue Mill Bridge, Hoomana Overpass Bridge, and German Hill Historic District (see Figure 3-6).

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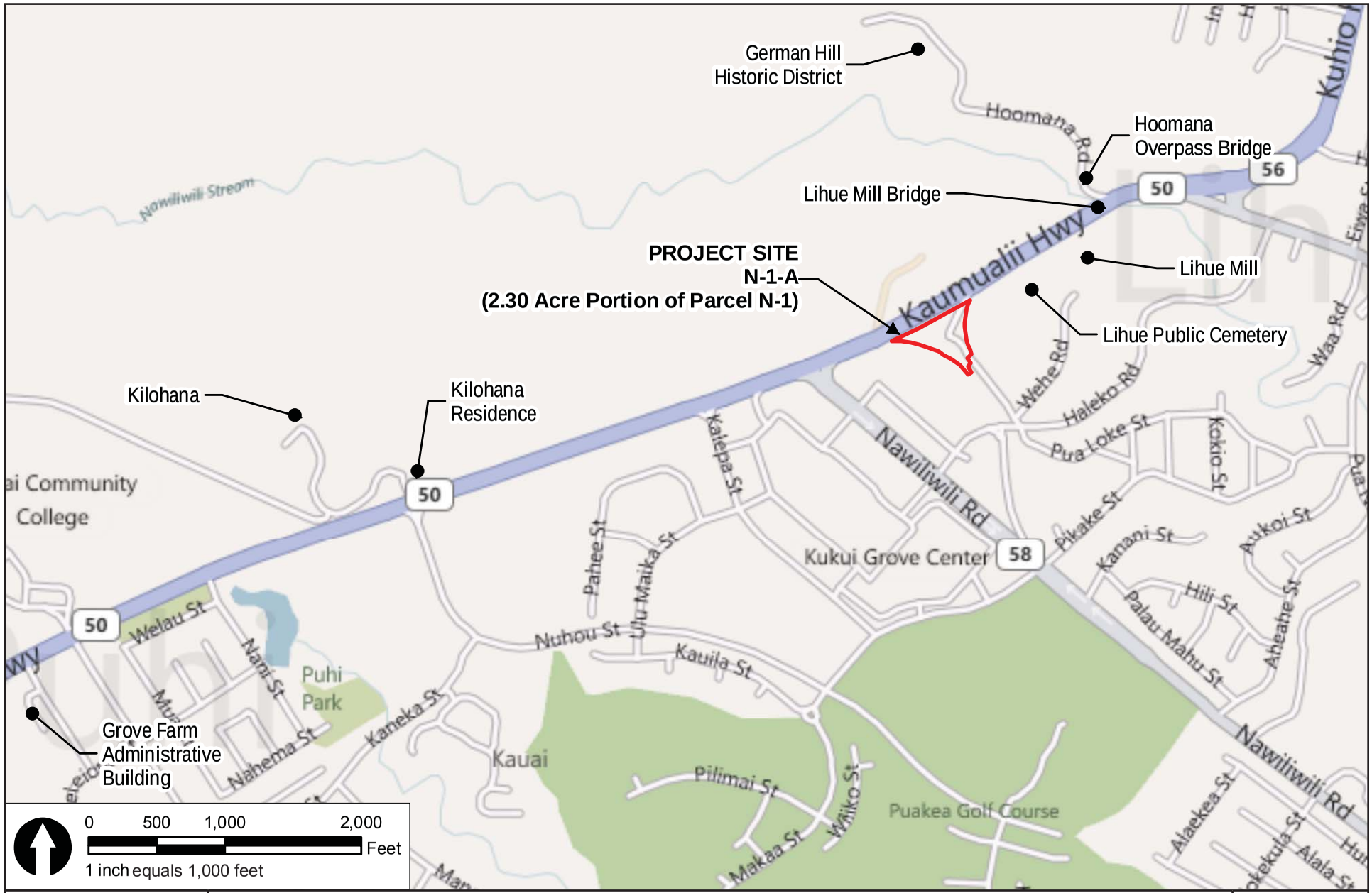

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HISTORIC PROPERTIES IN THE AREA OF POTENTIAL EFFECT

FIGURE 3-6

The Lihue Public Cemetery is located on a knoll overlooking Kaumualii Highway on the makai side. The cemetery dates back to the 19th century. The cemetery was established by the Rice family, and became the resting place of members of prominent families that had settled on Kauai including William Harrison Rice, the manager of Lihue Plantation, who was the first person buried in the cemetery in 1862.

The Lihue Mill, which was built in the mid-1930s, is located in the same site as the original Lihue Plantation mill, which was built in 1849. The existing mill is in fair condition and many of its windows have been replaced or covered with corrugated metal.

The Lihue Mill Bridge was constructed in 1936, providing grade-separation for a railroad alignment leading to Lihue Sugar Mill. The bridge is only one of two steel stinger grade separations constructed in the State. The materials used for the bridge are original, and no reconstruction or major repair of the bridge has been conducted. The historic significance of Lihue Mill Bridge is related to its rare steel stringer bridge design.

The German Hill Historic District is a residential community located on Hoomana Road. German Hill includes 20 houses built by Hackfield and Company for its department heads and the Lihue Lutheran Church which served laborers from Hanover and Bremen, Germany. The houses of German Hill were built between 1920 and 1935. Lihue Lutheran Church in was built in 1883. The individual buildings have been modified, but these changes have largely been consistent with the character of the district.

Hoomana Overpass Bridge was constructed in 1928 by Lihue Plantation. The historic significance of this bridge is derived largely from its narrow width and short sight lines. The bridge's original design and materials have not been altered since its construction.

A traditional cultural properties (TCP) assessment was also conducted for the project, however the TCP did not identify any cultural properties or practices in areas immediately adjacent to Kaumualii Highway, nor did it identify TCPs outside the highway corridor. The assessment did note that since the 19th century, the project area was used extensively for large-scale agriculture, as well as for commercial and residential development. Individuals who were contacted for information regarding TCPs in the area could not identify any in the immediate area, nor within the ahupuaa. It is likely that these past agricultural uses and other developments have removed nearly all evidence of past cultural practices.

Impacts and Mitigation Measures

No significant impacts on historic, archaeological, or cultural resources are anticipated as a result of the construction and operation of the proposed project. Should any significant archaeological, cultural, or historic resources be found during construction activities, all work will cease and SPHD will be notified immediately.

3.9 Traffic

Access to the project site is currently provided through Pua Loke Street off of Haleko Road, a predominantly two-lane, two-way roadway generally oriented in the north-south direction that serves as a connector roadway between Nawiliwili Road and Rice Street. Southwest of the project site, Haleko Road intersects Nawiliwili Road. At this signalized intersection, the southbound approach of Haleko Road has an exclusive left-turn lane and a shared through and right–turn lane. Nawiliwili Road is a predominantly four-lane, two-way roadway in the vicinity of

the project site generally oriented in the east-west direction. At the intersection with Haleko Road, both approaches of Nawiliwili Road have an exclusive left-turn lane, one through lane, and a shared through and right-turn lane. The northbound approach of the intersection is comprised of a driveway for the adjacent shopping center. At this intersection, the shopping center driveway has an exclusive left-turn lane and a shared through and right-turn lane.

Northeast of the intersection with Nawiliwili Road, Haleko Road intersects Pua Loke Street. At this unsignalized intersection, both approaches of Haleko Road have one lane that serves all traffic movements. The Pua Loke Street approaches of the intersection have one stop-controlled lane that serves all traffic movements.

Further northeast, Haleko Road intersects Rice Street. At this unsignalized T-intersection, the Haleko Road approach has one stop-controlled lane that serves right-turn movements only. Rice Street is a predominantly four-lane, two-way roadway in the vicinity of the project site generally oriented in the east-west direction. The eastbound approach of Rice Street has one through and right-turn lane while the westbound approach has an exclusive left-turn lane and one through lane.

A Traffic Impact Report (TIR) for the proposed project was prepared in June 2011 by Wilson Okamoto Corporation (WOC) (see Appendix B). The results are summarized below. Field investigations were conducted on May 12, 2011 during the morning peak hours of 6:00 a.m. and 9:00 a.m., and between the afternoon peak hours of 3:00 p.m. and 6:00 p.m. at the intersections of Haleko Road and Nawiliwili Road, Haleko Road and Pua Loke Street, and Haleko Road and Rice Street.

Analysis of highway capacity is based on the concept of Level of Service (LOS). LOS is a quantitative and qualitative assessment of traffic operations. LOS are defined by LOS “A” through “F”; LOS “A” representing ideal or free-flow traffic operating conditions and LOS “F” unacceptable or potentially congested traffic operating conditions.

The morning peak hour of traffic generally occurs between 7:15 a.m. and 8:15 a.m. in the vicinity of the project. In the afternoon, the peak hour of traffic generally occurs between the hours of 3:45 p.m. and 4:45 p.m.
At the intersection with Nawiliwili Road, the Haleko Road approach carries 344 vehicles and 542 vehicles southbound during the AM and PM peak periods, respectively. The traffic movements on this approach operate at LOS “B” during both peak periods. Traffic queues periodically formed on this approach with the most significant queuing occurring during the PM peak period. During this period, average queue lengths of 12-14 vehicles were observed on the Haleko Road approach. Most of these queues were observed to clear the intersection after each traffic signal cycle change. However, occasionally vehicles had to wait for more than one traffic signal cycle.

The Nawiliwili Road approaches of the intersection carry 144 vehicles eastbound and 460 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is approximately the same with 170 vehicles traveling eastbound and 424 vehicles traveling westbound. The left-turn traffic movements at both approaches of Nawiliwili Road operate at LOS “C” during both peak periods while the through and right-turn traffic movements operate at LOS “B” during both peak periods. Traffic queues periodically formed on the eastbound and westbound approaches of the intersection with average queue lengths of 5-7

vehicles observed on both approaches during both peak periods. These queues were observed to clear the intersection after each traffic signal cycle change.

The northbound approach of the intersection is comprised of a driveway for the adjacent shopping center. This approach carries 105 vehicles and 289 vehicles northbound during the AM and PM peak periods, respectively. The left-turn traffic movement on this approach operates at LOS "A" during both peak periods while the through and right-turn traffic movement operates at LOS "B" during both peak periods. Traffic queues periodically formed on this approach of the intersection with average queue lengths of 5-7 vehicles observed during both peak periods. These queues were observed to clear the intersection after each traffic cycle change.

At the intersection with Pua Loke Street, Haleko Road carries 473 vehicles northbound and 342 vehicles southbound during the AM peak period. During the PM peak period, traffic volumes are higher with 622 vehicles traveling northbound and 477 vehicles traveling southbound. Both approaches of Haleko Road operate at LOS "A" during both peak periods.

The Haleko Road approach of the intersection carries 72 vehicles and 41 vehicles eastbound during the AM and PM peak periods, respectively. This approach operates at LOS "B" during the AM peak period and LOS "C" during the PM peak period.

The westbound approach of the intersection is comprised of Pua Loke Street. This approach carries 40 vehicles and 62 vehicles westbound during the AM and PM peak periods, respectively. The Pua Loke Street approach operates at LOS "B" during the AM peak period and LOS "C" during the PM peak period.

At the intersection with Rice Street, Haleko Road carries 405 vehicles and 497 vehicles northbound during the AM and PM peak periods. This approach operates at LOS "B" during both peak periods.
The Rice Street approaches of the intersection carry 432 vehicles eastbound and 631 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 361 vehicles traveling eastbound and 861 vehicles traveling westbound. The critical movement on the Rice Street approaches is the westbound left-turn traffic movement which operates at LOS "B" during both peak periods.

<u>Impacts and Mitigations Measures</u>
In the short-term, temporary traffic impacts associated with construction activities are anticipated.

To determine impacts from the proposed project WOC used the trip generation methodology which is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. Trip generation for the proposed improvements was conservatively based upon the entire square footage of the proposed new building. Project site trip generation applied to the AM and PM peak hours of traffic are summarized in Table 3-1.

Table 3-1 **Peak Hour Trip Generation**		
GENERAL OFFICE BUILDING Independent Variable: 1,000 square feet of development = 17.7		
		PROJECTED TRIP ENDS
AM PEAK	ENTER EXIT TOTAL	24 3 27
PM PEAK	ENTER EXIT TOTAL	4 22 26
Source: Wilson Okamoto Corporation. *Traffic Impact Report for the Department of Water Lihue Baseyard Improvements.* June 2011.		

In conjunction with the trip generation methodology, through traffic forecasting methodology was also used. The travel forecast utilizes a conservative average annual traffic growth rate of 2.0% per year in the project vicinity. As such, using 2011 as the Base Year, growth rate factor of 1.08 was applied to the existing traffic demands along those roadways to achieve the projected Year 2015 traffic demands.

Based on the above mentioned methodology the TIR analysis is based on cumulative volumes consisting of site-generated traffic superimposed over Year 2015 projected traffic demands. The projected Year 2015 AM and PM peak hour traffic volumes and operating conditions without the implementation of the proposed project are summarized in Table 3-2.

Traffic operations in the vicinity of the project site without the implementation of the planned improvements are expected to deteriorate slightly due to ambient growth in traffic along the surrounding roadways. The northbound left-turn traffic movement at the intersection of Haleko Road with Nawiliwili Road and the westbound approach of the intersection with Pua Loke Street are expected to operate at slightly lower levels of service during the AM peak period. The remaining critical movements at these intersections, as well as, the intersection with Rice Street are expected to continue operating at LOS similar to existing conditions.

Traffic operations in the vicinity of the project site with the implementation of the proposed improvements are expected to operate at LOS similar to Year 2015 without project conditions despite the addition of site-generated traffic to the surrounding roadways. The critical movements at the intersections of Haleko Road with Nawiliwili Road and Pua Loke Street are expected to continue operating at LOS “C” or better during both peak periods while those at the intersection with Rice Street are expected to continue operating at LOS “B” during both peak periods. In addition, the total traffic volumes entering the intersections of Haleko Road with Nawiliwili Road and Rice Street are expected to increase by less than 2% during both peak periods with the proposed project while those at the intersection with Pua Loke Street are expected to increase by 2-3% during both peak periods. These increases in the total traffic volumes are in the

range of daily volume fluctuations in the project vicinity and represent a minimal increase in the overall traffic volumes.

Table 3-2
Projected Year 2015 (Without and With Project)
Traffic Operation Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Year 2015 w/out Proj	Year 2015 w/ Proj	Year 2015 w/out Proj	Year 2015 w/ Proj
Haleko Rd/ Nawiliwili Rd	Eastbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Westbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Northbound	LT	B	B	A	A
		TH-RT	B	B	B	B
	Southbound	LT	B	B	B	B
		TH-RT	B	B	B	B
Haleko Rd/ Pua Loke St	Eastbound	LT-TH-RT	B	B	C	C
	Westbound	LT-TH-RT	C	C	C	C
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-TH-RT	A	A	A	A
Haleko Rd/ Rice St	Westbound	LT	B	B	B	B
	Northbound	RT	B	B	B	B

Source: Wilson Okamoto Corporation. *Traffic Impact Report for the Department of Water Lihue Baseyard Improvements*. June 2011.

Based on the analysis of the traffic data, the following recommendations were offered:

- Maintain sufficient sight distance for motorists to safely enter and exit all project roadways.
- Maintain adequate on-site loading and off-loading service areas and prohibit off-site loading operations.
- Maintain adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on-site to avoid vehicle-reversing maneuvers onto public roadways.
- Maintain sufficient turning radii at all project roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

With the implementation of the aforementioned recommendations, the implementation of improvements at the project site is not expected to have a significant impact on traffic operations in the vicinity. The critical movements at the study intersections along Haleko Road are expected to continue operating at LOS similar to without project conditions. In addition, the total traffic volumes entering the intersections of Haleko Road with Nawiliwili Road and Rice Street are expected to increase by less than 2% during both peak periods with the proposed project while those at the intersection with Pua Loke Street are expected to increase by 2-3% during both peak periods. These increases in

the total traffic volumes are in the range of daily volume fluctuations in the project vicinity and represent a minimal increase in the overall traffic volumes.

3.10 Views

Scenic resources in Lihue include Haupu (Hoary Head) Mountain Range to the southwest and Kilohana Crater and Mount Waialeale to the north. The limited vegetation along the edge of the project site fronting Kaumualii Highway makes the project site highly visible from the highway.

The Heritage Resources Map for the Lihue area designates portions of Kaumualii Highway located to the west of the project site as a Scenic Roadway Corridor (see Figure 4-2). Scenic Roadway Corridors conserve open space, scenic features, and views within and along Kauai's major roadways and lands visible from these roadways to preserve Kauai's rural character.

Impacts and Mitigation Measures

No short- or long-term significant impacts on visual resources in the project area are anticipated during construction or operation of the proposed project. The new Administration Building is envisioned to be a two-story structure, but will be designed to minimize its intrusion on the visual environment through architectural design criteria and extensive landscaping.

3.11 Socio-Economic Characteristics

The project area is situated within the Lihue Census Designated Place (CDP). Demographic and other information was reviewed from the U.S. Census 2000 for the Lihue CDP and is shown in Table 3-3. At the time that this document was prepared, data from the 2010 U.S. Census was not available.

Based on the data shown on the table, Lihue CDP has a slightly older population than the County. The median age of the population for Lihue CDP was 44.0 versus 38.4 for the County.

By racial mix, the Lihue CDP has a much higher percentage of Asians (66.2%) than the County (36.0%) as well as a slightly higher percentage of Whites (37.1%) than the County (29.5%). Lihue CDP also has a slightly lower percentage of those with two or more races (20.5%) than the County (23.8%). These three races make up the majority of the population. Native Hawaiian and other Pacific Islanders comprise a higher proportion than the County as a whole, with 18.7% and 9.1%, respectively.

Impacts and Mitigation Measures

In the short-term, the construction expenditures from the proposed project will provide positive benefits to the local economy. This would include some construction and construction support jobs, and the purchase of materials from local suppliers as well as indirect benefits to local retail businesses resulting from construction activities.

In the long-term, the proposed improvements will allow the DOW the much needed space for their programming and operation needs. The additional space may in turn allow for the filling of the additional 14 staff positions programmed to meet current operation demands as well as accommodate the future staffing needs of the DOW.

Table 3-3
Demographic Characteristics: 2000

Subject	Lihue CDP		Kauai County	
	Number	Percent	Number	Percent
Total population	**5,674**	**100.0**	**58,463**	**100.0**
AGE				
Under 5 Years	318	5.6	3,605	6.2
5 – 19 years	1,077	19.0	13,147	22.5
20 – 64 years	3,008	53.0	33,642	57.5
65 years and over	1,271	22.4	8,069	13.8
Median age (years)	44.0	--	38.4	--
RACE				
White	2,107	37.1	17,255	29.5
Black or African American	37	0.7	177	0.3
American Indian and Alaska Native	69	1.2	212	0.4
Asian	3,759	66.2	21,042	36.0
Native Hawaiian and other Pacific Islander	1,059	18.7	5,334	9.1
Other	215	3.8	505	0.9
Two or more races	1,161	20.5	13,938	23.8
HOUSEHOLD (BY TYPE)				
Total Households	2,178	100.0	20,183	100.0
Family households (families)	1,420	79.1	14,572	72.2
Married-couple family	1,066	57.8	10,881	53.9
With own children under 18 years	376	28.1	4,842	24.0
Female householder, no husband present	258	15.2	2,582	12.8
With own children under 18 years	139	7.8	1,424	7.1
Nonfamily households	758	5.8	5,611	27.8
Average household size	2.55	--	2.87	--
HOUSING OCCUPANCY AND TENURE				
Total Housing Units	2,399	100.0	25,331	100.0
Occupied units	2,178	6.7	20,183	79.7
By owner	1,289	68.7	12,384	61.4
By renter	889	31.3	7,799	38.6
Vacant units	221	13.3	5,148	20.3

Source: U.S. Census Bureau, Census 2000

3.12 Public Services

Police: Police protection is provided by the Kauai Police Department which has four stations located in Lihue, Hanalei, Kapaa, and Waimea. The Kauai Police Department is divided into three Patrol Service Bureaus, the Hanalei District in the north, the Lihue District in the southeast, and the Waimea District in the southwest. Lihue District provides service for the Kapaa and Lihue communities which include the areas of Puhi, Nawiliwili, Hanamaulu, and Wailua. The Lihue District's office is located on the first floor of the Kauai Police Department's Headquarters in Lihue at 3990 Kaana Street, approximately 1.43 miles east of the project site.

Fire: Fire protection services are provided by the Kauai County Fire Department which is located in Lihue at 4444 Rice Street, approximately 0.86 miles east of the project site. The Kauai County Fire Department operates seven fire stations throughout the island located in Hanalei, Kapaa, Lihue, Koloa, Kalaheo, Hanapepe, and Waimea. The project site will be serviced by the Lihue Fire Station which is located at 4223 Rice Street, approximately 0.8 miles east of the project site.

Health Care Services: Wilcox Memorial Hospital & Kauai Medical Clinic is located at Suite B, 3-3420 Kuhio Highway in Lihue approximately 1.2 miles from the project site. This facility provides comprehensive inpatient, outpatient and same day services for Kauai residents and visitors. Various medical offices are located in the Lihue area to serve the residents of the area.

Recreational Facilities: Park facilities on Kauai are operated by the State and the County. The State's Department of Land and Natural Resources Division of State Parks operates nine parks that offer outdoor recreation and heritage resources. The nearest State park to the project site is Ahukini State Park which is located at the end of Ahukini Road in Lihue, approximately 3.08 miles northeast of the project site. Ahukini State Park includes Ahukini Pier, a concrete pier situated at the mouth of Hanamaulu Stream, which is offers views of Hanamaulu Bay. Ahukini Pier is also an excellent place for pole fishing and netting. The County of Kauai's Department of Parks & Recreation operates 17 parks in the Lihue area including 13 neighborhood parks, three beach parks, and one stadium. The County also operates eight neighborhood centers that offer recreational and educational programs for the communities of Kauai. The Lihue Neighborhood Center is located 3353 Eono Street, approximately 0.97 miles northeast of the project site.

Impacts and Mitigations Measures

No significant impacts on public services in the project area are anticipated from construction and operation of the proposed project.

Although it is likely that the proposed project would require the occasional police and fire protection and medical services, it would likely not represent a significant amount relative to the overall regional demand. The proposed project will be designed and built in compliance with the applicable County fire code requirements. Additional fire prevention and suppression measures will be provided by installing sprinkler systems and fire alarm systems in both the DOW Administration Building and the DPW Storage Building.

The proposed project is not expected to affect student enrollment at public school facilities in the area. Therefore, it will not hinder the educational services provided to residents in the area.

The proposed project is not expected to affect immigration to Kauai County and the project area and, therefore, is not anticipated to create additional demands on existing recreational facilities.

3.13 Infrastructure

Water: There is no water service connection at the proposed project site. Water service for the existing Lihue Baseyard is provided through an existing 6-inch waterline connected to an existing 10-inch waterline at the intersection of Haleko Road and Pua Loke Road.

Wastewater: There is no public sanitary sewer system connection available at the proposed site. The existing Lihue Baseyard's Administration and Operations Buildings are connected to an aerobic treatment system which uses a seepage pit for effluent disposal while the Micro Lab Building is connected to a septic tank and leaching field for effluent disposal. Both of these systems are currently at full capacity.

Storm Water: There is no storm water collection system at the proposed project site. Storm water runoff generally flows from the southwest higher ground to the northeast lower ground and eventually into Kaumualii Highway.

Electrical and Communications: Electrical service for the area is provided by Kauai Island Utility Cooperative (KIUC) and telephone service is provided by Hawaiian Telecom.

Gas: The proposed project site is currently clear of any gas facilities.

Impacts and Mitigation Measures

No significant impacts on the provision of water, wastewater, drainage, electrical, telephone, and gas services are anticipated during construction and operation of the proposed project.

During design and construction of the proposed improvements, close coordination will be maintained with the respective government agencies and utility companies to ensure that the utility lines will not be adversely impacted and the appropriate utility services will not be interrupted to adjacent areas.

A new 8-inch waterline will be needed to connect to the existing 10-inch waterline for domestic water, fire hydrant and fire sprinkler connections for the new Administration Building and future Storage Building. A new water meter and backflow preventer are needed for this new waterline.

A new sewage treatment system is needed for the proposed project. DOW is seeking to create a new sewer connection to the existing Grove Farm sanitary sewer system in Pua Loke Street, just beyond Haleko Road. This option would require approval from Grove Farm for the sewer connection and the construction of approximately 1,200 linear feet of 8-inch gravity sewer line. This sewer connection would serve both the proposed project and the existing baseyard which would allow the existing system to be decommissioned.

All wastewater plans shall conform to applicable provisions of the DOH Administrative Rules, chapter 11-62, "Wastewater Systems."

Storm water runoff will be directed away to an underground storm water retention system at the site.

4. RELATIONSHIP TO LAND USE, POLICIES AND CONTROLS

The plans and policies relating to the proposed project range from broad program guidance to land use controls governing the project site. Construction of the proposed project is in consonance with the various plans, policies, and regulatory controls, as discussed below.

4.1 State of Hawaii

4.1.1 Hawaii State Plan

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes, as amended) provides the overall theme, goals, objectives, policies and priority guidelines for statewide planning. The Hawaii State Plan also directs the appropriate State agencies to prepare functional plans for their respective program areas. The proposed project supports and is consistent with the following State Plan objectives:

Section 226-11 Objectives and policies for the physical environment—land-based, shoreline, and marine resources.

(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.
(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.

Potential impacts on drainage patterns resulting from alteration of the topography within the project site will be addressed through appropriate engineering design to prevent excessive surface flows or ponding.

Excavation and grading activities associated with construction of the proposed project will be regulated by the County's grading ordinances and the NPDES permit requirement administered by the DOH.

An NPDES General Permit for Storm Water Associated with Construction will be required for the project, as the area of soil disturbance from activities such as clearing, grubbing, grading, and stockpiling will exceed one acre. In conjunction with the NPDES permit, a BMP plan will be prepared for construction activities within the project site. Erosion and sediment control migtigation measures that are typically included in the BMP plan are appropriately stockpiling materials on-site to prevent runoff, covering or stabilizing topsoil stockpiles, use of sediment basins and sediment traps, and establishing re-vegetation or landscaping as early as possible on completed areas.

Following construction, exposed soils at the project site will have been built over, paved over, or re-vegetated to control erosion. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

Dewatering activities are not anticipated for this project.

Section 226-12 Objectives and policies for the physical environment—scenic, natural beauty, and historic resources.

(b)(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
(b)(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.
(b)(5) Encourage the design of developments and activities that complement the natural beauty of the islands.

No significant visual or aesthetic impacts are anticipated as a result of the proposed project. Existing public viewpoints of the project include Haupu (Hoary Head) Mountain Range to the southwest and Kilohana Crater and Mount Waialeale to the north.

The new Administration Building is envisioned to be a two-story structure, but will be designed to minimize its intrusion on the visual environment through architectural design criteria and extensive landscaping. In addition, proposed improvements include additional parking to accommodate employees and visitors. The proposed parking will be screened and beautified with consistent landscaping.

The future expansion of the Lihue Baseyard includes additional parking to accommodate employees and visitors. The proposed parking will be screened and beautified with consistent landscaping.

No significant impacts on historic, archaeological, or cultural resources are anticipated as a result of the construction and operation of the proposed project. Should any significant archaeological, cultural, or historic resources be found during construction activities, all work will cease and SPHD will be notified immediately.

Section 226-16 Objectives and policies for facility systems—water.

(b)(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.
(b)(5) Support water supply services to areas experiencing critical water problems.

The existing DOW Lihue Baseyard is too small to effectively and efficiently accommodate DOW's current and future operation space needs. Development of a new DOW Administration Building will address the DOW Lihue Baseyard's short-term and long-term operational space needs.

4.1.2 State Land Use District

The State Land Use Law, Chapter 205, Hawaii Revised Statutes (HRS) is intended to preserve, protect, and encourage the development of lands in the State for uses which are best suited to the public health and welfare of Hawaii's people. Under Chapter 205, HRS, all lands in the State of Hawaii are classified by the State Land Use Commission (LUC) into four major categories referred to as State Land Use Districts: These districts are identified as the Urban District, Agricultural District, Conservation District, and Rural District.

The LUC's Land Use District Boundary Map for the Island of Kauai depicts the lands within the project area as being designated within the State Urban District (see Figure 4-1). Permitted uses within the State Urban District are prescribed under Title 12, Chapter 205 HRS and the LUC's Administrative Rules prescribed under Title 12, Subtitle 3, Chapter 15 HAR.

Under §15-12-35, HAR, pertaining to permissible uses within the Urban District, permitted uses include any and all uses permitted by the counties, either by ordinance or rules, and are subject to any commission imposed by the LUC pursuant to section 205-4(g), HRS. The proposed project site is zoned "Open" under the Kauai County Comprehensive Zoning Ordinance. Under Article 8, Section 8-8.3, the proposed action is anticipated to be permitted in conjunction with a Use Permit and a Class IV zoning permit administered by the County.

4.2 County of Kauai

4.2.1 County of Kauai General Plan

The County General Plan (2000) provides broad policy statements to guide land use regulations, new developments and facilities, and planning for County facilities and services. Relevant sections of the General Plan and their consistency with the project are as follows:

<u>General Plan Policies:</u> The proposed project is consistent with the following policies:

3 Caring For The Land, Water And Culture

3.2 Scenic Views

3.2.1 Policy

(a) In developing public facilities and administering land use regulations, the County shall seek to preserve scenic resources and public views. Public views are those from a public place, such as a park, highway, or along the shoreline.

(b) The County shall observe the following general principles in maintaining scenic resources:

(1) Preserve public views that exhibit a high degree of intactness or vividness.

- *"Intactness" refers to the integrity of visual patterns and the extent to which the landscape is free from structures or other visually encroaching features.*
- *"Vividness" relates to the memorability of a view, caused by contrasting landforms which create striking and distinctive patterns. (Examples are the silhouette of Mt. Haupu against the horizon, views of Nounou Mountain from the valley and the coast, and the view of Hanalei Valley from the overlook.)*

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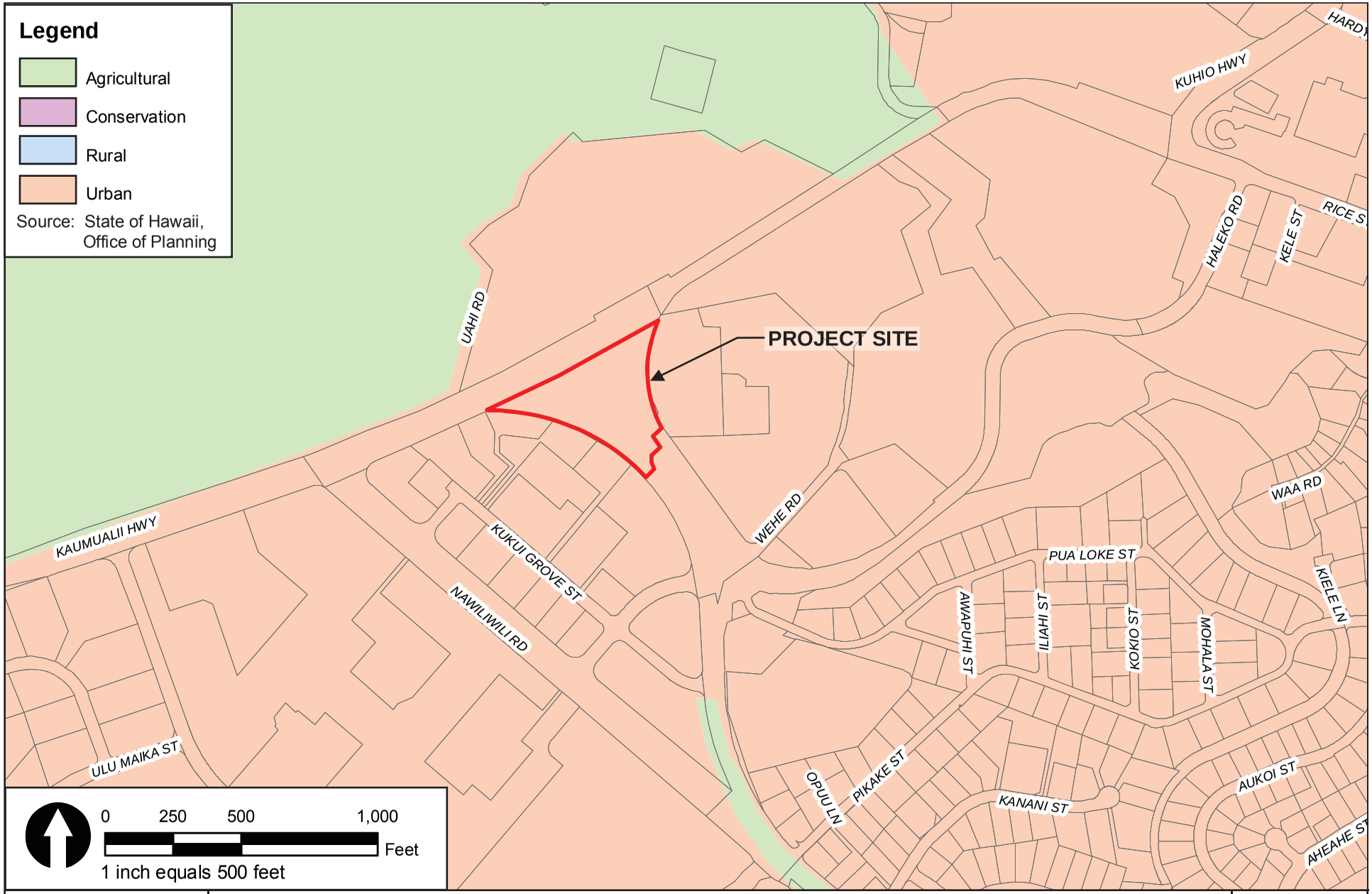

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Lihue Baseyard Improvements

STATE LAND USE DISTRICT MAP

FIGURE 4-1

(2) Preserve the scenic qualities of mountains, hills and other elevated landforms, qualities such as the silhouette against the horizon and the mass and shape of the landform.

(3) Preserve the scenic qualities of lowland/open spaces features, such as the shoreline, the edge of a coastal bluff, a marsh, a fishpond, or a historic or cultural property. Structures should not impede or intrude upon public views of the feature and should not alter the character of the immediate area around the land feature, historic or cultural property.

No significant visual or aesthetic impacts are anticipated as a result of the proposed project.

Existing public viewpoints of the project site include Haupu (Hoary Head) Mountain Range to the southwest and Kilohana Crater and Mount Waialeale to the north The Heritage Resources Map for Lihue Planning District designates portions of Kaumualii Highway located to the west of the project site as a Scenic Roadway Corridor, as shown in Figure 4-2 (County of Kauai, 2000). Scenic Roadway Corridors conserve open space, scenic features, and views within and along Kauai's major roadways and lands visible from these roadways to preserve Kauai's rural character.

The new Administration Buildings is envisioned to be a two-story structure, but will be designed to minimize it's intrusion on the visual environment through architectural design criteria and extensive landscaping. In addition, proposed improvements include additional parking to accommodate employees and visitors. The proposed parking will be screened and beautified with consistent landscaping.

3.4 Watersheds, Streams and Water Quality

3.4.2 Policy

(a) Site Development. Plan, design and develop sites to:

a. Protect areas that provide important water quality benefits – i.e., wetlands;

b. *Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;*

The project site is located in the Nawiliwili Bay unified watershed, one of the five 'Category I/Priority Watersheds' identified by the DOH as in need of watershed restoration. Some restoration strategies for new developments include reducing average annual post-development sediment in runoff (total suspended solids), so that it is no greater than pre-development levels, maintaining post-development peak runoff rate and average volume at levels similar to predevelopment, and promoting the use of permeable surfaces for driveways and parking and limit increases of impervious areas.

No significant impacts on geology, topography, and soils in the project area are anticipated. The proposed project will result in some alteration of the topography within the project site; however, any impacts on drainage patterns will be addressed through appropriate engineering design to prevent excessive surface flows or ponding.

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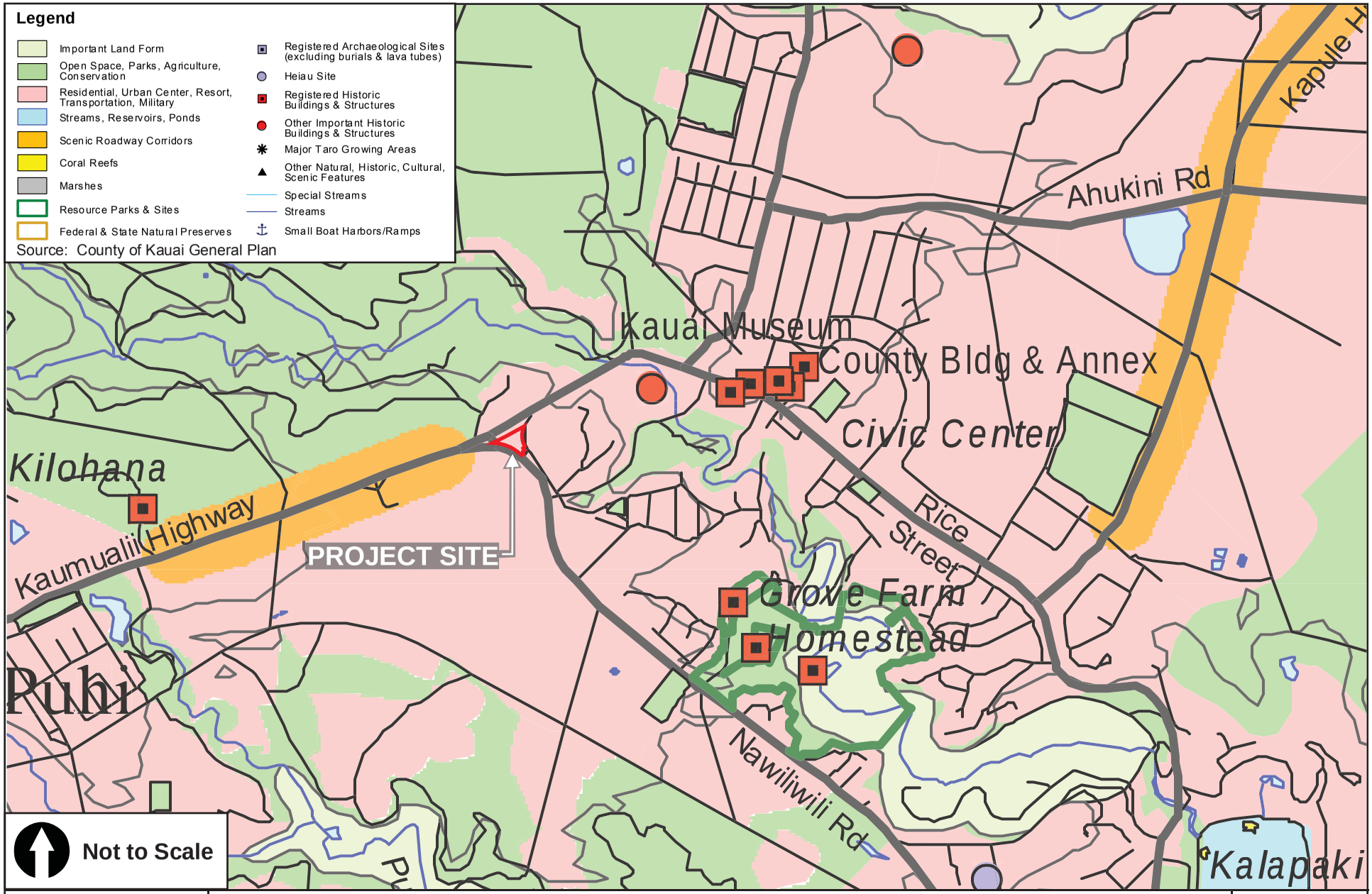

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Lihue Baseyard Improvements

KAUAI GENERAL PLAN: HERITAGE RESOURCES MAP

FIGURE 4-2

Excavation and grading activities associated with construction of the proposed project will be regulated by the County's grading ordinances and the NPDES permit requirement administered by the DOH.

An NPDES General Permit for Storm Water Associated with Construction will be required for the project, as the area of soil disturbance from activities such as clearing, grubbing, grading, and stockpiling will exceed one acre. In conjunction with the NPDES permit, a BMP plan will be prepared for construction activities within the project site. Erosion and sediment control migtigation measures that are typically included in the BMP plan are appropriately stockpiling materials on-site to prevent runoff, covering or stabilizing topsoil stockpiles, use of sediment basins and sediment traps, and establishing re-vegetation or landscaping as early as possible on completed areas.

Following construction, exposed soils at the project site will have been built over, paved over, or re-vegetated to control erosion. All discharges related to the project construction or operation activities will comply with the State's Water Quality Standards.

6 Enhancing Towns & Communities and Providing for Growth

6.3 Lihue

6.3.4.2 Policies

(a) Regional Growth and Public Facilities

(1) New growth shall be concentrated in the Puhi-Lihue-Hanamaulu urban center.

The proposed project is situated within the Puhi-Lihue-Hanamaulu urban center. In the short-term, the construction expenditures from the proposed project will provide positive benefits to the local economy. This would include some construction and construction support jobs, and the purchase of materials from local suppliers as well as indirect benefits to local retail businesses resulting from construction activities.

In the long-term, the new administration building will accommodate DOW Lihue Baseyard's current and future functions and operations through the year 2050.

7.5 Water Supply

7.5.4 Policy

(a) The County and private utilities shall develop and operate wastewater collection, treatment and disposal systems as necessary to serve urban areas for the purpose of safeguarding public health, potable water supplies, and the quality of stream and ocean waters..

(b) The County and private developers should coordinate planning, development, and operation and management of wastewater systems in accordance with long-range facility plans.

The existing baseyard's Administration Building and Operations Building are connected to an aerobic treatment system which uses a seepage pit for effluent disposal while the Micro Lab Building is connected to a septic tank and leaching field for effluent disposal. Both of these systems are currently at full capacity.

A new sewage treatment system is needed for the proposed project. DOW is seeking to create a new sewer connection to the existing Grove Farm sanitary sewer system in Pua Loke Street, just beyond Haleko Road. This option would require approval from Grove Farm for the sewer connection and the construction of approximately 1,200 linear feet of 8-inch gravity sewer line. This sewer connection would serve both the proposed project and the existing baseyard which would allow the existing system to be decommissioned.

All wastewater plans shall conform to applicable provisions of the DOH Administrative Rules, chapter 11-62, "Wastewater Systems."

7.6 Drainage and Flood Control

7.6.2 Policy

(d) Regulations and drainage improvements shall be consistent with the following principles:

(5) Require detention basins in new developments, in order to maintain pre-development stormwater flow rates. Requirements shall be based on the two-year storm but may be increased.

In order to maintain pre-development storm water flow rates, an underground storm water retention system and the installation of drain outlets on the project site is proposed. Storm water runoff will be also be directed away from the project site to the landscaped areas.

4.2.2 County of Kauai General Plan Land Use Map Designation

The County of Kauai General Plan Land Use Map for the Lihue Planning District designates the proposed project site as Urban Center (see Figure 4-3). The County policies for Urban Center Designations are as follows:

(a) Lands included within the Urban Center designation shall be centers of government, commerce and transportation that serve the entire county or a large region. Uses may include shopping centers, government offices, churches and other institutions, office complexes, and industrial facilities. Residential or resort uses may also be located within the Urban Center designation, where compatible.

(b) Urban Center areas are typically served by wastewater collection and treatment facilities and major roads. Urban Center lands may be zoned for any type of use, including General Commercial, General Industrial, Resort, and Residential.

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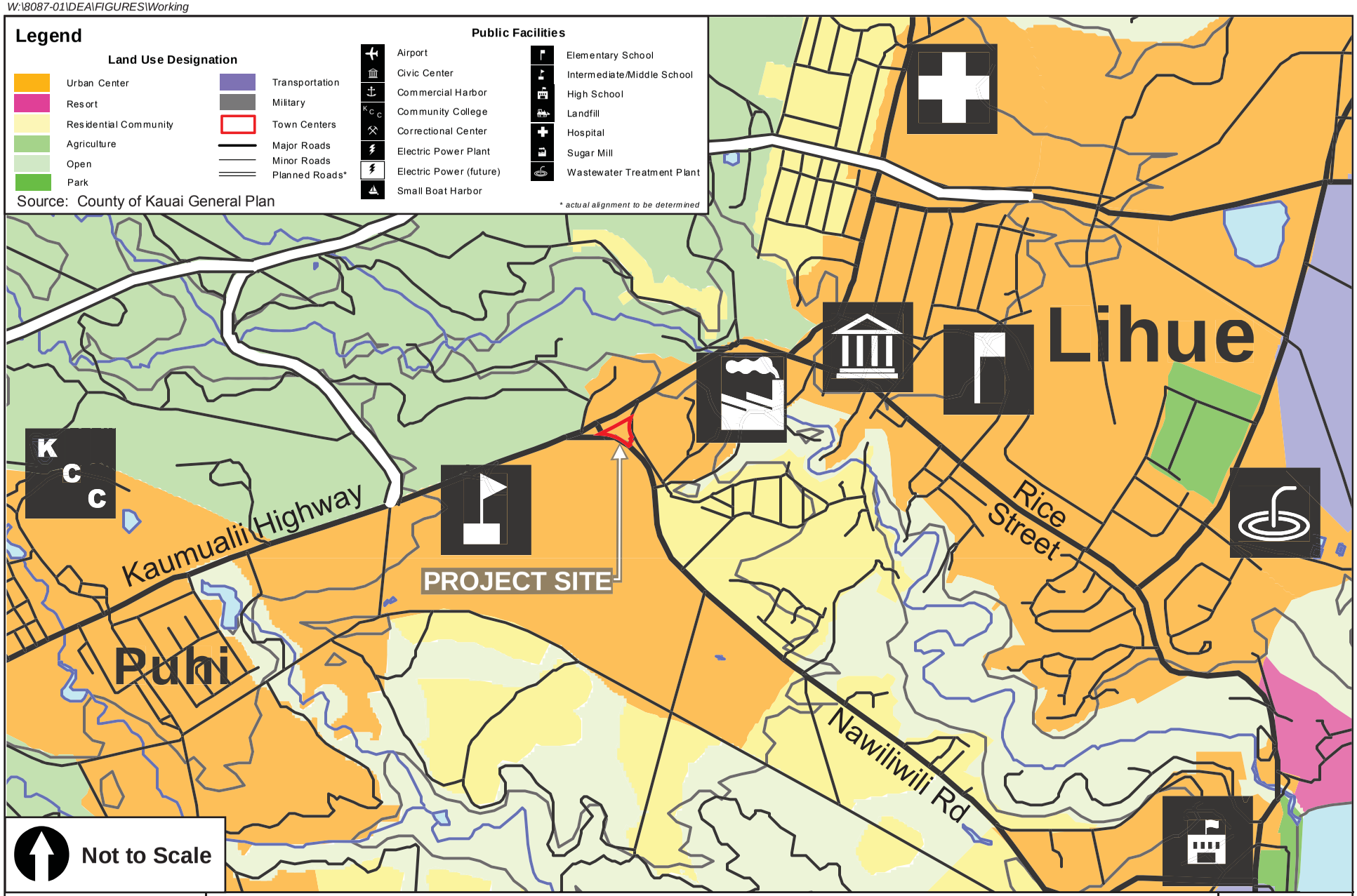

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Lihue Baseyard Improvements

KAUAI GENERAL PLAN: LAND USE MAP

FIGURE 4-3

The proposed project is consistent with this designation as the proposed action involves the construction of a government office and storage facility that will be used to serve the County.

4.2.3 Lihue Development Plan

The County's Lihue Development Plan, adopted by County ordinance in 1976, provides physical, social and economic measures which relate specifically to these communities. The Lihue Development Plan land use designation for the proposed project site is "Open" (see Figure 4-5).

Lands designated as "Open" are usually so because the area is desirable for physical and/or social reasons. However, there are some exceptions, including individual homes found in Open designation areas. Currently the proposed project is consistent with the Lihue Development Plan since the County zoning of "Open" for the property may be permitted in which a Use Permit and a Class IV zoning permit would be required

4.2.4 County Comprehensive Zoning Ordinance

The Kauai County Comprehensive Zoning Ordinance ("CZO") sets forth standards for land development and construction of buildings and other structures in the County. The CZO establishes land use districts and delineates the respective types of permitted uses and development that can take place in those districts.

The proposed project site is zoned "Open" (see Figure 4-4). Under Article 8 Section 8-8.1, the CZO states that the purpose of the open districts is to:

> *Preserve, maintain or improve the essential characteristics of land and water areas that are:*
>
> 1. *of significant value to the public as scenic or recreational resource;*
> 2. *important to the overall structure and organization of urban areas and which provide accessible and usable open areas for recreational and aesthetic purposes;*
> 3. *Necessary to insulate or buffer the public and places of residence from undesirable environmental factors caused by, or related to, particular uses such as noise dust, and visually offensive elements.*

The proposed project is anticipated to be a permitted use under Section 8-8.3, Uses and Structures For Which a Use Permit is Required. In conjunction with the Use Permit, a Class IV zoning permit is also required.

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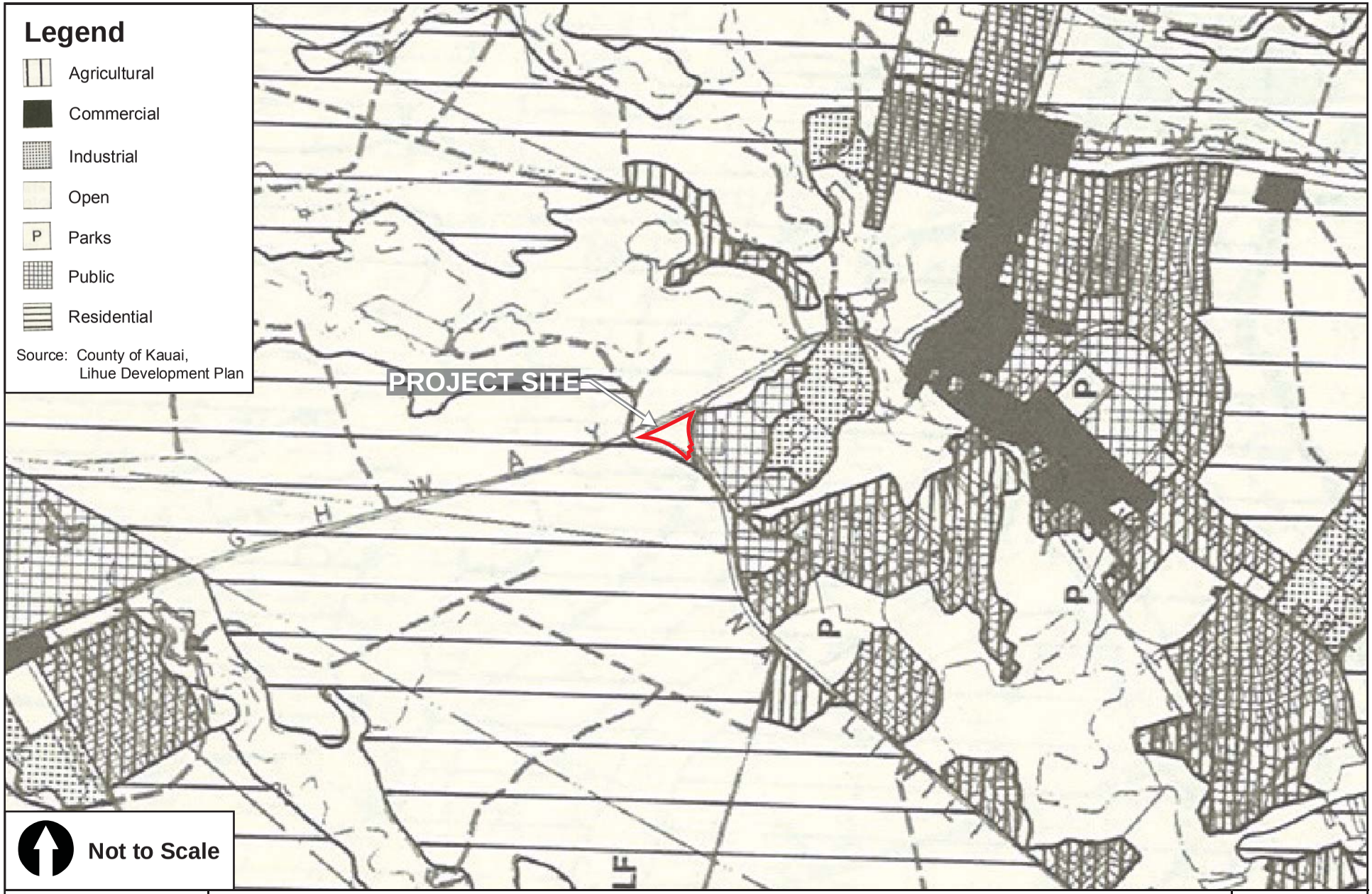

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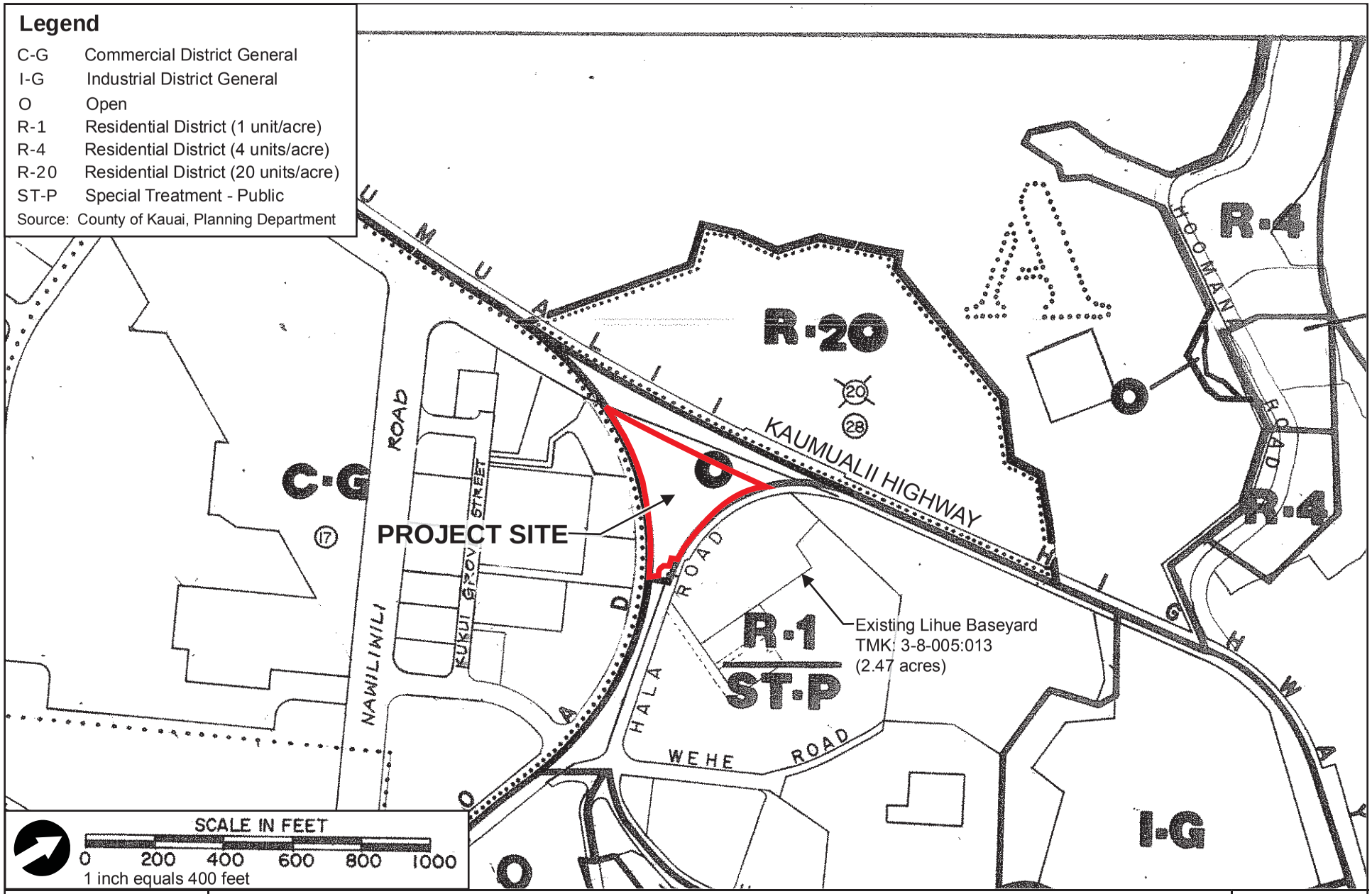
LIHUE DEVELOPMENT PLAN: EXISTING LAND USE MAP

FIGURE 4-4



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Lihue Baseyard Improments

COUNTY OF KAUAI ZONING MAP

FIGURE 4-5

5. ALTERNATIVES CONSIDERED

5.1 No Action Alternative

Under the No Action Alternative, the existing DOW Lihue Baseyard would continue to be overcrowded. Development of the new Administration Building would not be possible and the existing Baseyard would continue to serve the current and future DOW operation needs.

The No Action Alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

5.2 Redeveloping the Current DOW Lihue Baseyard Site

Under this option, the baseyard would be redeveloped on its current site. However, the existing baseyard site is too small to effectively and efficiently accommodate the DOW's current and future operation spaced needs. In addition, renovating or replacing any existing buildings for expansion would require temporary facility spaces to house the displaced operations. Appropriate facilities for temporary relocation could not be identified nearby. For these reasons, this option was eliminated.

5.3 Primary Site Options

Three additional site layout options were considered for the proposed project. The first option looked at a physical separation between the DOW Administration Building and the future DPW Storage Building by building the Administration Building closest to the existing baseyard. This option also included a two story parking structure. This option is unsuitable as it discourages shared access, parking and loading between the DOW and DPW. It is the least flexible in site uses and has the highest site development cost. The second option had a different building configuration with the Administration Building located on the western portion of the property, away from the exiting baseyard. This option also included the parking structure. This option was undesirable due to the associated development cost. The third option places the Administration Building on the western portion of the property, the DPW Storage Building on the northern portion of the property, and an at-grade parking lot on the southern portion of the property. This option is unsuitable because of the cross-traffic created between the DOW and DPW facilities. The location of the DPW Storage Building on the northern portion of the site would effectively divide the DOW baseyard. In addition, truck traffic in and out of the Storage Building would interrupt the secured and safe operations of the baseyard.

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6. DETERMINATION AND COMPLIANCE

This Draft EA was prepared for review in accordance with the consultation process of Chapter 343, HRS. Based on the significance criteria set forth in Section 11-200-12 of Title 11, Chapter 200, Administrative Rules, State Department of Health, it is anticipated that the proposed project will not have a significant effect on the environment and that a Finding of No Significant Impact ("FONSI") will be filed with the State Office of Environmental Quality Control (OEQC) following the public consultation period. The reasons supporting this determination are described below according to these significance criteria.

(1) Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;

The proposed project will not involve the loss or destruction of any natural or cultural resources since the project site has been previously disturbed with the development of the existing Pua Loke Road on-ramp. In the event that any significant archaeological, cultural, or historic resources be found during construction activities, all work will cease and SPHD will be notified immediately.

(2) Curtail the range of beneficial uses of the environment;

The proposed project will not curtail the beneficial uses of the environment. The proposed project involves the revitalization and expansion of an existing use.

(3) Conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 343, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;

The proposed project does not conflict with long-term environmental policies, goals, and guidelines of the State of Hawaii. As presented in this EA, the project's potential temporary adverse impacts are associated primarily with short-term construction-related activities and can be mitigated through adherence to standard construction mitigation practices.

(4) Substantially affect the economic or social welfare of the Community or State;

In the short-term, the project will have beneficial economic impacts to the local area. Direct economic benefits will result from the hiring of construction workers and purchasing of materials from local suppliers. Indirect economic benefits may include benefits to local retailing businesses resulting from construction activities.

There are no significant adverse long-term socio-economic impacts anticipated with the proposed project. The expansion of the DOW Lihue Baseyard is not expected to induce growth beyond that which is anticipated for the region.

(5) Substantially affect public health;

The proposed project will not adversely impact public health. Short-term impacts are related to construction-related activities such as air quality and noise. The appropriate mitigation measures will be implemented to minimize the impact to visitors and employees of the existing baseyard, as well as the surrounding neighbors.

(6) Involve substantial secondary impacts, such as population changes or effects on public facilities;

No significant adverse impact to public facilities or services is anticipated. The proposed project is consistent with the Lihue General Plan and could help to stimulate the planned economic development of the Lihue Plan.

(7) Involve a substantial degradation of environmental quality;

The proposed project is not anticipated to have a negative impact upon the environment. Construction activities associated with the proposed project are anticipated to result in short-term impacts to noise, air quality, water quality and traffic in the immediate vicinity. With the incorporation of mitigation measures during the construction period, the project will not result in long-term degradation to the environmental quality.

(8) Individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

The proposed project will not create a commitment for any larger actions, nor will it contribute to cumulative negative effect upon the environment. The proposed project involves the further expansion of an existing use and is consistent with land use plans and designations.

(9) Substantially affect a rare, threatened or endangered species, or its habitat;

There are no known rare, threatened or endangered species of flora or fauna or critical habitats on the project site that could be adversely affected by the proposed project.

(10) Detrimentally affect air or water quality or ambient noise levels;

Operation of construction equipment would temporarily elevate ambient noise and concentrations of exhaust emission in the immediate vicinity of the project site. The proposed expansion of the Lihue Baseyard will have no significant long-term impact on air or water quality or ambient noise levels in the vicinity.

(11) Affect or is likely to suffer damage by being located in an environmentally -sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

The project site is located within Zone “X”, which is defined as “Areas determined to be outside the 0.2% annual chance floodplain”. No significant impacts to flood hazards are anticipated as a result of the proposed action. The project site is located outside of the tsunami inundation zone.

(12) Substantially affect scenic vistas and viewplanes identified in County or State plans or studies; or

The proposed project will not significantly impact views or visual resources. Existing public viewpoints of the project include Haupu (Hoary Head) Mountain Range to the southwest and Kilohana Crater and Mount Waialeale to the north.

The new Administration Building is envisioned to be a two-story structure, but will be designed to minimize it's intrusion on the visual environment through architectural design criteria and extensive landscaping.

Improvements also include additional at-grade parking lots to accommodate employees and visitors. The proposed parking lots will be screened and beautified with consistent landscaping.

(13) Require substantial energy consumption.

Construction and operation of the project will not require a substantial increase in energy consumption.

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7. LIST OF REQUIRED PERMIT APPROVALS

The following is a list of permits, approvals and reviews, which may be required prior to construction of the proposed project:

State of Hawaii

Department of Health
- Noise Variance Permit
- National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Associated with Construction

Disabilities Communication and Access Board (DCAB)
- Review pursuant to the Americans with Disabilities Act Accessibility Guidelines (ADAAG)

County of Kauai

Planning Department
- Use Permit
- Class IV Zoning Permit
- Grading Permit
- Building Permit

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8. CONSULTATION

8.1 Pre-Assessment Consultation

The following agencies and organizations were contacted during the preparation of the Draft EA. Of those who formally replied during the pre-assessment period, some had no comments while others provided substantive comments as indicated by the ✓ and ✓✓, respectively. All written comments are reproduced herein (see Appendix C).

<u>Federal</u>
U.S. Federal Highway Administration
U.S. Fish and Wildlife Service ✓✓
U.S. Geological Survey ✓
U.S. Natural Resources Conservation Service

<u>State</u>
Department of Agriculture
Department of Business, Economic Development, and Tourism (DBEDT)
Department of Health (DOH)
- Clean Air Branch, DOH ✓✓
- Wastewater Branch, DOH ✓✓

Department of Land and Natural Resources (DLNR)
- Division of Forestry and Wildlife, DLNR ✓✓
- Division of State Parks, DLNR ✓
- Engineering Division, DLNR ✓✓
- Land Division, Kauai District, DLNR ✓
- Historic Preservation Division, DLNR ✓

Department of Transportation ✓✓
Office of Hawaiian Affairs ✓
Department of Hawaiian Homelands ✓
University of Hawaii Environmental Center

<u>County</u>
Department of Parks and Recreation
Department of Planning
Department of Public Works ✓✓
Transportation Agency
Fire Department ✓
Police Department
Office of the Mayor

<u>Other</u>
County Council Chair Jay Furfaro

<u>Utility Companies</u>
Kauai Island Utility Cooperative (KIUC)
Hawaiian Telcom
The Gas Company ✓✓

8.2 Draft EA Consultation

The following agencies and organizations will be consulted during the public review period of the Draft EA

Federal
U.S. Federal Highway Administration
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Natural Resources Conservation Service

State
Department of Agriculture
Department of Accounting and General Services
Department of Business, Economic Development, and Tourism (DBEDT)
    Energy Division, DBEDT
    Office of Planning, DBEDT
Department of Defense
Department of Education
Department of Hawaiian Homelands
Department of Health (DOH)
    Clean Air Branch, DOH
    Wastewater Branch, DOH
Department of Human Services
Department of Labor and Industrial Relations
Department of Land and Natural Resources (DLNR)
    Division of Forestry and Wildlife, DLNR
    Division of State Parks, DLNR
    Engineering Division, DLNR
    Land Division, Kauai District, DLNR
    Historic Preservation Division, DLNR
Department of Transportation
Hawaii Housing Finance and Development Corporation
Office of Hawaiian Affairs
University of Hawaii Environmental Center

County
Department of Parks and Recreation
Department of Planning
Department of Public Works
Transportation Agency
Fire Department
Police Department
Office of the Mayor

Elected Officials
County Council Chair Jay Furfaro

Libraries
Lihue Public Library

Utility Companies
Kauai Island Utility Cooperative (KIUC)
Hawaiian Telcom
The Gas Company

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Appendix A

Avian and Terrestrial Mammalian Survey Conducted for the County of Kauai Department of Water Lihue Baseyard Improvements Project Lihue, Island of Kauai, Hawaii

Rana Biological Consultanting, Inc.

Avian and Terrestrial Mammalian Surveys Conducted for the County of Kaua'i Department of Water Līhu'e Baseyard Improvement Project, Līhu'e, Island of Kaua'i, Hawai'i

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August 27, 2011

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Introduction and Background

The County of Kaua'i, Department of Water (DOW) is proposing to develop a 17,700 square foot new Administration Building and future County Department of Public Works (DPW) Storage Building on a 2.30 acre site to be acquired and consolidated with the existing 2.47 acre Līhu'e Baseyard in Līhu'e, Kaua'i (Figure 1). The new Administration Building is planned to accommodate DOW Līhu'e Baseyard's current and future functions and operations through the year 2020, including parking, loading and staging areas.

This report describes the methods used and the results of the avian and terrestrial mammalian surveys conducted on the project site as part of the environmental disclosure process associated with the proposed project.

The primary purpose of the surveys was to determine if there are any avian and terrestrial mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the study area. We were also asked to evaluate the potential impacts that the development of the project might pose to any sensitive or protected native avian or mammalian species, and to propose appropriate minimization and or mitigative measures that could be implemented to reduce or eliminate any such impacts. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (Department of Land and Natural Resources (DLNR) 1998, U. S. Fish & Wildlife Service (USFWS) 2005a, 2005b, 2011). Fieldwork was conducted on August 25, 2011

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

Site Description

The approximately 2.3-acre triangular shaped site is an undeveloped parcel of land bound to the north by Kaumuali'i Highway, to the east by Hala Road and to the west by the Kukui Grove Village mall (Figure 1). At the time of this survey the vegetation on the site was made up of a mowed grass lawn with four ornamental *kukui* (*Aleurites moluccana*) trees planted within the lawn area (figure 2 and 3). There were also several large piles of construction spoil material and several large water pipes within the site (Figure 2).

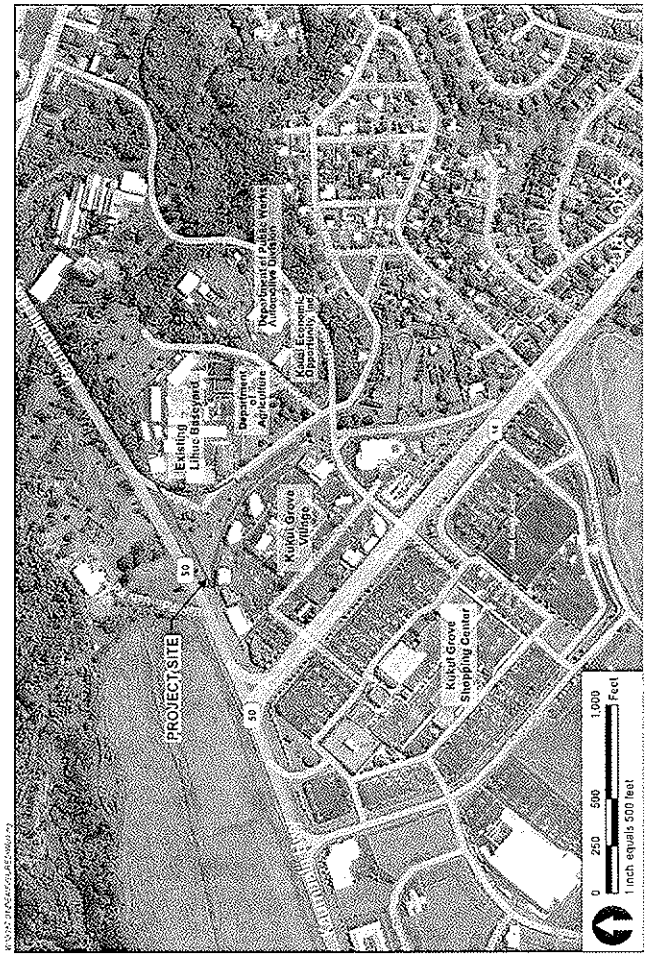

Figure 1 – Project Site and Surrounding Uses

Figure 2 – DOW Site looking north from southern boundary

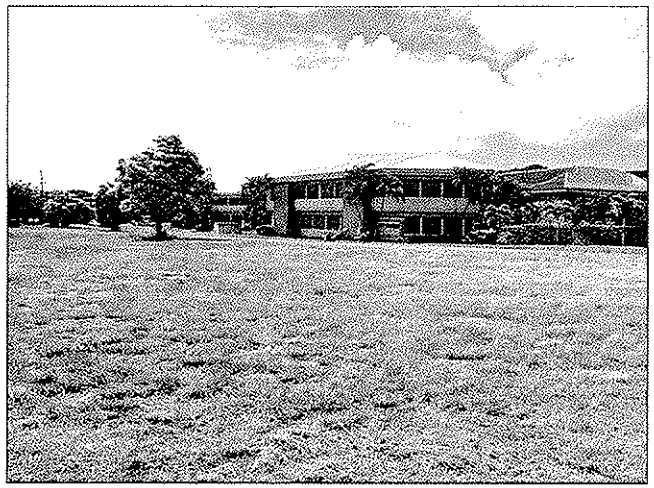

Figure 3 – DOW Site looking southwest showing lawn and Kukui Grove Village

Methods

Avian Survey Methods

The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union 1998), and the 42nd through the 52nd supplements to the Check-List (American Ornithologists' Union 2000; Banks et al., 2002, 2003, 2004, 2005, 2006, 2007, 2008; Chesser *et al.*, 2009, 2010, 2011).

A single avian point count stations was sited in the center of the site. A single eight-minute point count was conducted at the count station. Field observations were made with the aid of Leica 10 X 42 binoculars and by listening for vocalizations. The survey was conducted 07:30 a.m. and 8:30 a.m., the peak of daily bird activity. Time not spent counting was used to search the remainder of the project site for any species and/or habitats that were not detected during the point count.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'ōpe'ape'a* as it is known locally, all terrestrial mammals currently found on the Island of Kaua'i are alien species, and most are ubiquitous. The survey for terrestrial mammalian species was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all terrestrial vertebrate mammalian species detected within the project area.

Results

Avian Survey

A total of 29 individual birds of nine species, representing a like number of separate families, were recorded during the station counts (Table 1). All of the species detected are alien to the Hawaiian Islands. Avian diversity and densities were in keeping with the urban manicured nature of the site, and it's location in the lowlands of Kaua'i. The most commonly recorded species was Common Myna (*Acridotheres tristis*), which accounted for 32 percent of the total number of individual birds recorded.

No avian species currently proposed for listing, or listed under either federal or State of Hawaii endangered species statutes was detected on the site.

Table 1 – Avian Species Detected DOW Līhu'e Administration Building Site			
Common Name	*Scientific Name*	*ST*	*#*
	GALLIFORMES		
	PHASIANIDAE – Pheasants & Partridges		
	Phasianinae – Pheasants & Allies		
Red Junglefowl	*Gallus gallus*	A	3
	PELECANIFORMES		
	ARDEIDAE - Herons, Bitterns & Allies		
Cattle Egret	*Bubulcus ibis*	A	1
	COLUMBIDAE - Pigeons & Doves		
Zebra Dove	*Geopelia striata*	A	4
	PASSERIFORMES		
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	2
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	8
	EMBERIZIDAE - Emberizids		
Red-crested Cardinal	*Paroaria coronata*	A	3
	FRINGILLIDAE - Fringilline and Carduleline Finches & Allies		
	Carduelinae - Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	4
	PASSERIDAE - Old World Sparrows		
House Sparrow	*Passer domesticus*	A	3
	ESTRILDIDAE - Estrildid Finches		
	Estrildinae - Estrildine Finches		
Nutmeg Mannikin	*Lonchura punctulata*	A	4

Key to table 1
ST Status
A Alien – Introduced to the Hawaiian Islands by humans
\# Number - of individual birds recorded

Mammalian Survey

One terrestrial mammalian species was detected while on the site. Tracks and scat of dogs (*Canis f. familiaris*), was encountered at several locations on the parcel. No mammalian species currently proposed for listing, or listed under either federal or State of Hawaii endangered species statutes was detected on the site.

Discussion

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitat present on the site. All avian species recorded during the course of this survey are alien to the Hawaiian Islands.

In a letter to the project from the US Fish & wildlife Service dated May 25, 2011 (USFWS Log # 2011-TA-0265) the Service advised the project that *Nēnē* (*Branta sandvicensis*) have been seen in the general project area in the past. I paid particular attention to this species, none were recorded, nor have I ever seen them on this particular parcel of land (David 2011).

Although not detected during this survey, Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) have been recorded over-flying the project site between April and the end of November each year (David, 1995; Morgan *et al.*, 2003, 2004; David and Planning Solutions 2008). Additionally, the Save Our Shearwaters Program has recovered both species from the general project area on an annual basis over the past three decades (Morgan *et al.*, 2003, 2004; David and Planning Solutions, 2008; Save our Shearwater Program, 2010).

The petrel is listed as endangered, and the shearwater as threatened under both Federal and State of Hawai'i endangered species statutes. The primary cause of mortality in both Hawaiian Petrels and Newell's Shearwaters is thought to be predation by alien mammalian species at the nesting colonies (USFWS 1983, Simons and Hodges 1998, Ainley *et al.*, 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961; Telfer 1979; Sincock 1981; Reed *et al.*, 1985; Telfer *et al.*, 1987; Cooper and Day, 1998; Podolsky *et al.* 1998; Ainley *et al.*, 2001; Hue *et al.*, 2001; Day *et al* 2003).

There are no nesting colonies nor appropriate nesting habitat for either of these listed seabird species within or close to the current study site.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the site. We did not record Hawaiian hoary bats overflying the site. Hawaiian hoary bats are widely distributed in the lowland areas on the Island of Kaua'i, and have been documented in and around almost all areas that still have some dense vegetation (Tomich, 1986; USFWS 1998, David, 2011).

Although no rodents were detected during the course of this survey, it is likely that the four established alien *muridae* fund on Kaua'i, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rat (*Rattus exulans hawaiiensis*) use various resources found within the general project area. All of these introduced human commensal rodents are deleterious to native ecosystems and the native faunal species dependant on them.

Potential Impacts to Protected Species

Seabirds

The principal potential impact that construction and operation of the proposed administration building and associated infrastrucre poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main ways that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct nighttime construction activities, 2) following build-out, the potential operation of streetlights and exterior facility lighting.

Hawaiian hoary bat

The principal potential impact that the removal of woody vegetation on any site in the lowlands of Kauai poses to Hawaiian hoary bats is that, that activity may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories the potential disturbance resulting from the removal of such vegetation is likely to be minimal. During the pupping season female carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared, additionally adult female bats sometimes leave their pups in the roost tree while they themselves forage, very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

On this site there are four *kukui* trees, any of which a bat could potentially use as a day roost site, though given the lack of surrounding vegetation and the highly disturbed and urban nature of the site seems rather unlikely.

Critical Habitat

There is no federally delineated Critical Habitat for any species present on or adjacent to the project area. Thus the development and operation of the proposed facility will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under State law.

Recommendations

1. If nighttime construction activity or equipment maintenance is proposed during the construction phases of the project, all associated lights should be shielded, and when large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly at the ground.

2. If practicable, it is recommended that nighttime construction not occur between September 15, and December 15, the peek of seabird fallout.

3. All exterior lights installed in conjunction with the facility, should be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed *et al.*, 1985; Telfer *et al.*, 1987).

4. It is recommended that, the four *kukui* trees not be cleared between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

5. It is recommended that, where appropriate and practicable, native plant species be used in landscaping efforts. Not only is this ecologically prudent, but also if the appropriate plants are used, it will also likely save maintenance and water costs over the long term.

Glossary

Alien – Introduced to Hawai'i by humans
Commensal – Animals that share human food and lodgings, such as rats, mice cats and dogs.
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Endemic – Native to the Hawaiian Islands and unique to Hawai'i
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Muridae – Rodents, including rats, mice and voles, one of the most diverse family of mammals
'Ōpe'ape'a – Endemic endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*)
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are arranged by
Threatened – Listed and protected under the ESA as a threatened species

DLNR – Hawai'i State Department of Land & Natural Resources
DOFAW – Division of Forestry and Wildlife
DOW – Kaua'i Department of Water
DPW - Kaua'i Department of Public Works
ESA – Endangered Species Act of 1973, as amended
USFWS – United State Fish & Wildlife Service

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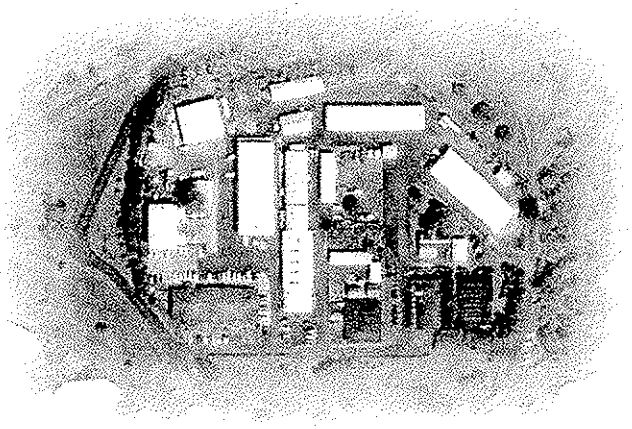
Appendix B

Traffic Impact Report for the
Department of Water Lihue Baseyard
Wilson Okamoto Corporation
June 2011

Traffic Impact Report

Department of Water
Lihue Baseyard



Prepared for:
Architects Hawaii Ltd.

Prepared by:
Wilson Okamoto Corporation

June 2011

TRAFFIC IMPACT REPORT

FOR THE

DEPARTMENT OF WATER

LIHUE BASEYARD IMPROVEMENTS

Prepared for:

Architects Hawaii Ltd.
American Savings Bank Tower
1001 Bishop Street, Suite 200
Honolulu, HI 96813

Prepared by:

Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOC Ref #8137-01

June 2011

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed improvements at the Department of Water's Lihue Baseyard on the island of Kauai. The proposed improvements entail the construction of a new administration building and parking areas.

B. Scope of Study

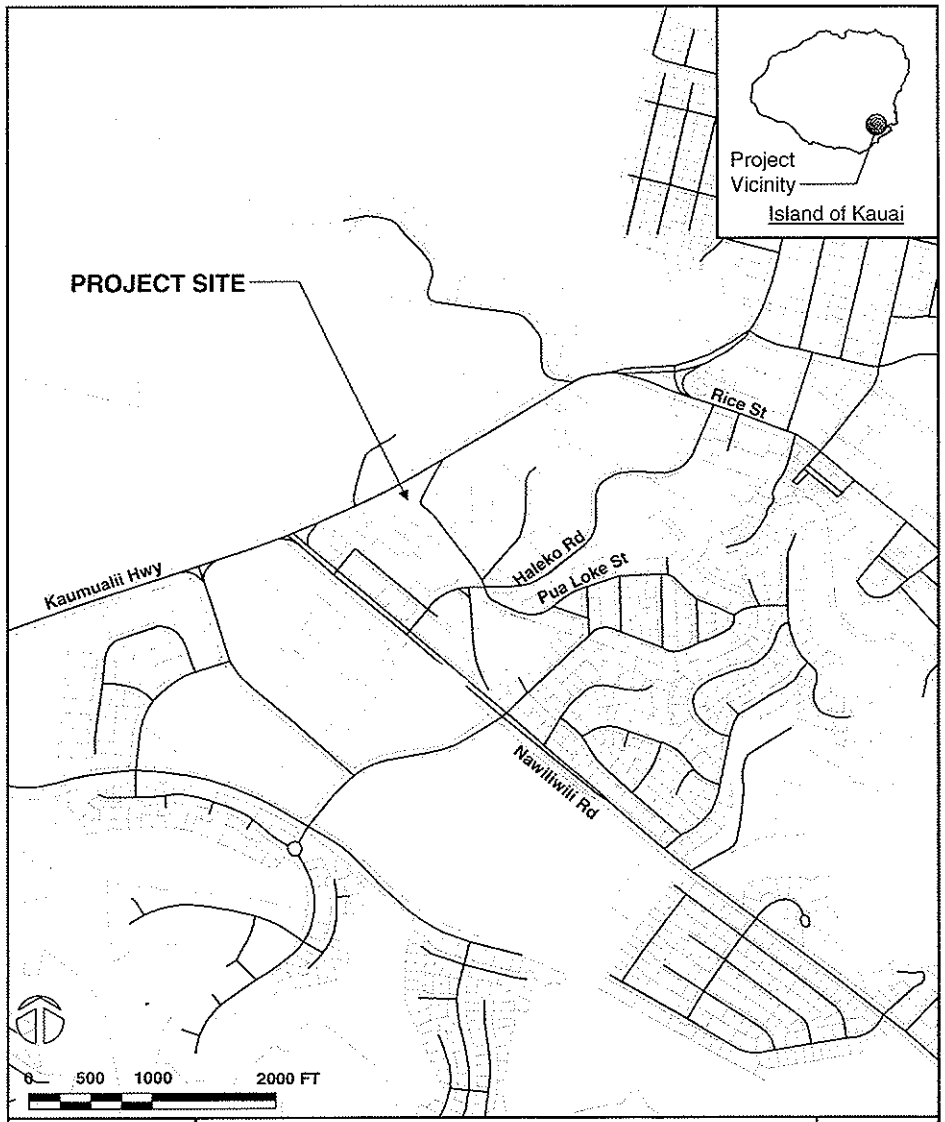
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The existing Lihue Baseyard for the Department of Water is located adjacent to Pua Loke Street between Kaumualii Highway and Haleko Road on the island of Kauai. The Department of Water plans to utilize an adjacent undeveloped parcel to expand their existing facilities. The proposed project site is further identified as Tax Map Key: 3-8-05: 13 (see Figure 1). Access to the Lihue Baseyard will continue to be provided via Pua Loke Street.



WILSON OKAMOTO CORPORATION
ENGINEERS - PLANNERS

DEPARTMENT OF WATER LIHUE BASEYARD

LOCATION MAP AND VICINITY MAP

FIGURE 1

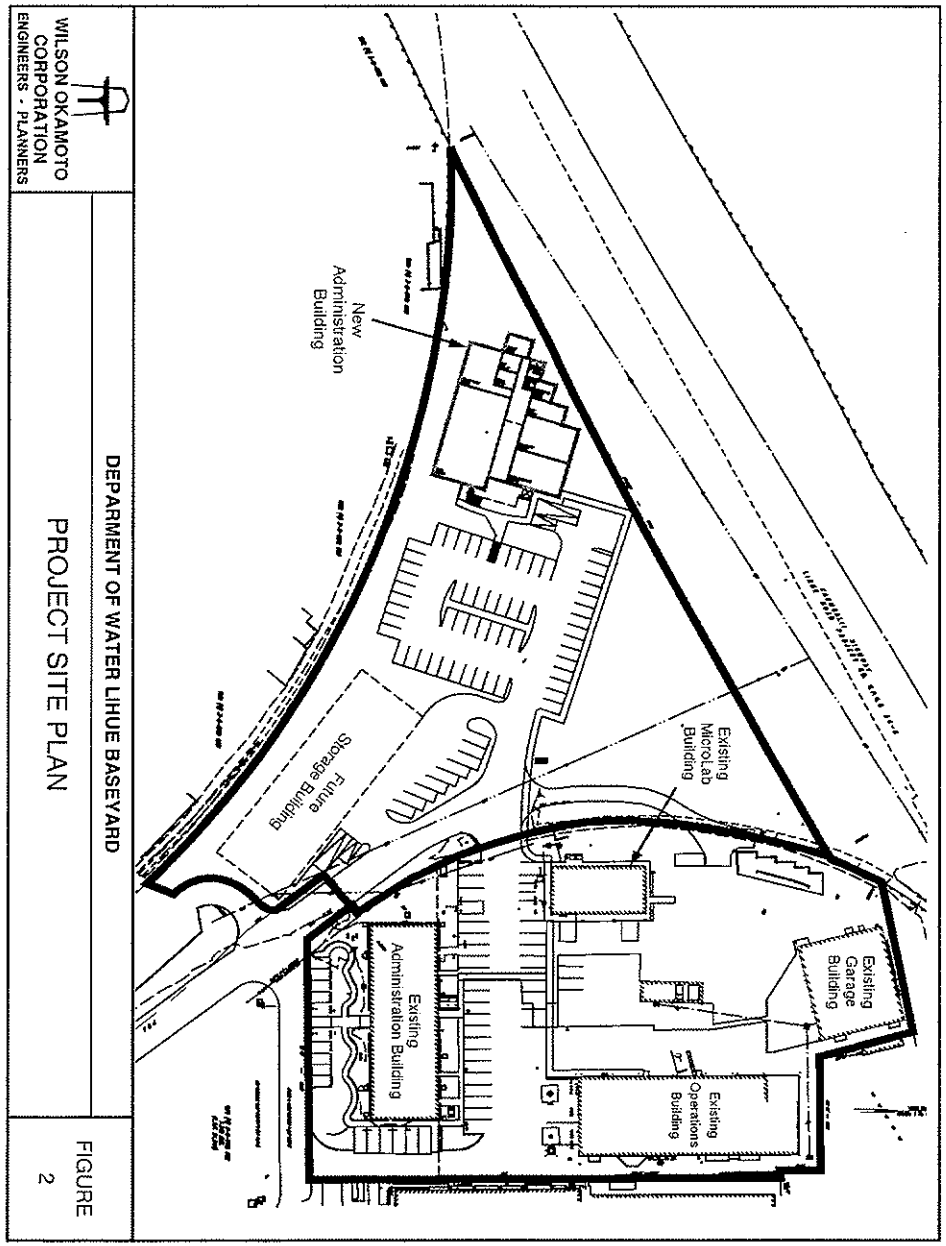
B. Project Characteristics

The Department of Water's (DOW) Lihue Baseyard is currently comprised of four buildings (Administration, Operations, Micro Lab, and Garage) and adjacent parking and loading areas. The existing facility is fully developed and densely populated with little opportunity for expansions or new development without demolishing existing facilities. As such, the DOW is planning to use an adjacent parcel to expand the existing baseyard. The new site will house a new Administration Building and parking areas with space reserved for a future storage building for the Department of Public Works. Once the new 17,700 square foot Administration Building is complete, DOW plans to relocate their employees from the existing, overcrowded Administration Building thereby freeing up the existing office spaces in that building for other uses. One of the potential uses for these spaces is for the relocation existing overcrowded office spaces in the existing Operations Building. However, the final redistribution of space within the existing baseyard site has not yet been determined and will be addressed under a subsequent phase of improvements. The proposed project is expected to be completed by the Year 2015 with access continuing to be provided via Pua Loke Street. Figure 2 shows the proposed site plan.

III. EXISTING TRAFFIC CONDITIONS

A. Area Roadway System

The access for the DOW's Lihue Baseyard is currently provided via Pua Loke Street off of Haleko Road, a predominantly two-lane, two-way roadway generally oriented in the north-south direction that serves as a connector roadway between Nawiliwili Road and Rice Street. Southwest of the project site, Haleko Road intersects Nawiliwili Road. At this signalized intersection, the southbound approach of Haleko Road has an exclusive left-turn lane and a shared through and right-turn lane. Nawiliwili Road is a predominantly four-lane, two-way roadway in the vicinity of the project site generally oriented in the east-west direction. At the intersection with Haleko Road, both approaches of Nawiliwili Road have an exclusive left-turn lane, one through lane, and a shared through and right-turn lane. The northbound approach of the intersection is comprised of a driveway for the adjacent shopping



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DEPARTMENT OF WATER LIHUE BASEYARD

PROJECT SITE PLAN

FIGURE 2

center. At this intersection, the shopping center driveway has an exclusive left-turn lane and a shared through and right-turn lane.

Northeast of the intersection with Nawiliwili Road, Haleko Road intersects Pua Loke Street. At this unsignalized intersection, both approaches of Haleko Road have one lane that serves all traffic movements while both approaches of Pua Loke Street have one stop-controlled lane that serves all traffic movements.

Further northeast, Haleko Road intersects Rice Street. At this unsignalized T-intersection, the Haleko Road approach has one stop-controlled lane that serves right-turn traffic movements only. Rice Street is a predominantly four-lane, two-way roadway in the vicinity of the project site generally oriented in the east-west direction. The eastbound approach of Rice Street has one through and right-turn lane while the westbound approach has an exclusive left-turn lane and one through lane.

B. Traffic Volumes and Conditions

1. General

a. Field Investigation

A field investigation was conducted on May 12, 2011 and consisted of manual turning movement count surveys during the morning peak hours between 6:00 AM and 9:00 AM, and the afternoon peak hours between 3:00 PM and 6:00 PM at the following intersections:

- Haleko Road and Nawiliwili Road
- Haleko Road and Pua Loke Street
- Haleko Road and Rice Street

Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Synchro" software developed by Trafficware. The analysis is based on the concept of

Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak hours of traffic.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

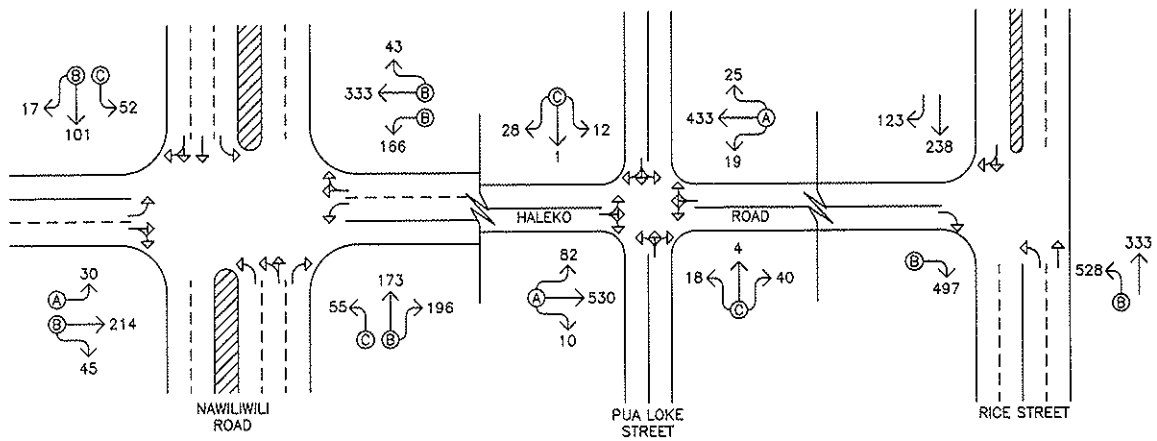
2. Existing Peak Hour Traffic

a. General

Figures 3 and 4 show the existing AM and PM peak hour traffic volumes and operating traffic conditions in the vicinity of the proposed project. The morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM in the vicinity of the project. In the afternoon, the peak hour of traffic generally occurs between the hours of 3:45 PM and 4:45 PM. The analysis is based on these commuter peak hour time periods to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.

b. Haleko Road and Nawiliwili Road

At the intersection with Nawiliwili Road, the Haleko Road approach carries 344 vehicles and 542 vehicles southbound during the AM and PM peak periods, respectively. The traffic movements on this approach operate at LOS "B" during both peak periods. Traffic queues periodically formed on this approach with the most significant queuing occurring during the PM peak period. During this period, average



LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

DATE OF COUNT: May 12, 2011

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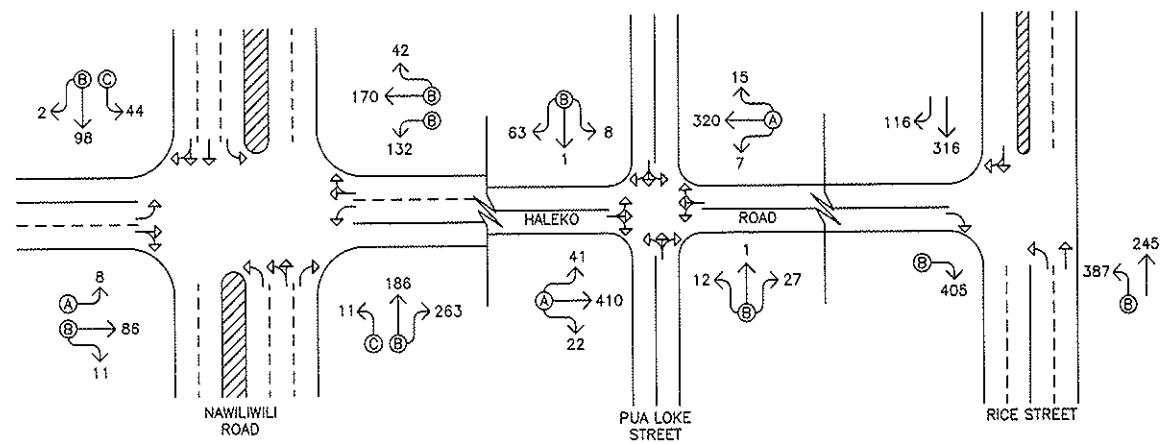
DEPARTMENT OF WATER LIHUE BASEYARD

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 4



LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

DATE OF COUNT: May 12, 2011

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DEPARTMENT OF WATER LIHUE BASEYARD

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3

queue lengths of 12-14 vehicles were observed on the Haleko Road approach. Most of these queues were observed to clear the intersection after each traffic signal cycle change. However, occasionally vehicles had to wait for more than one traffic signal cycle.

The Nawiliwili Road approaches of the intersection carry 144 vehicles eastbound and 460 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is approximately the same with 170 vehicles traveling eastbound and 424 vehicles traveling westbound. The left-turn traffic movement on both approaches of Nawiliwili Road operate at LOS "C" during both peak periods while the through and right-turn traffic movements operate at LOS "B" during both peak periods. Traffic queues periodically formed on the eastbound and westbound approaches of the intersection with average queue lengths of 5-7 vehicles observed on both approaches during both peak periods. These queues were observed to clear the intersection after each traffic signal cycle change.

The northbound approach of the intersection is comprised of a driveway for the adjacent shopping center. This approach carries 105 vehicles and 289 vehicles northbound during the AM and PM peak periods, respectively. The left-turn traffic movement on this approach operates at LOS "A" during both peak periods while the through and right-turn traffic movement operates at LOS "B" during both peak periods. Traffic queues periodically formed on this approach of the intersection with average queue lengths of 5-7 vehicles observed during both peak periods. These queues were observed to clear the intersection after each traffic signal cycle change.

c. Haleko Road and Pua Loke Street

At the intersection with Pua Loke Street, Haleko Road carries 473 vehicles northbound and 342 vehicles southbound during the AM peak period. During the PM peak period, traffic volumes are higher

with 622 vehicles traveling northbound and 477 vehicles traveling southbound. Both approaches of Haleko Road operate at LOS "A" during both peak periods.

The Pua Loke Street approaches of the intersection carry 72 vehicles eastbound and 40 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volumes is approximately the same with 41 vehicles traveling eastbound and 62 vehicles traveling westbound. Both approaches of Pua Loke Street operate at LOS "B" during the AM peak period and LOS "C" during the PM peak period.

d. Haleko Road and Rice Street

At the intersection with Rice Street, Haleko Road carries 405 vehicles and 497 vehicles northbound during the AM and PM peak periods. This approach operates at LOS "B" during both peak periods.

The Rice Street approaches of the intersection carry 432 vehicles eastbound and 631 vehicles westbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 361 vehicles traveling eastbound and 861 vehicles traveling westbound. The critical movement on the Rice Street approaches is the westbound left-turn traffic movement which operates at LOS "B" during both peak periods.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per 1,000 square feet of development. The proposed

improvements include the construction of a new Administration Building with the existing Administration Building expected to be utilized by other existing uses. However, since the use of the existing building has not been designated at this time, the trip generation for the proposed improvements was conservatively based upon the entire square footage of the proposed new building. Table 1 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic.

Table 1: Peak Hour Trip Generation

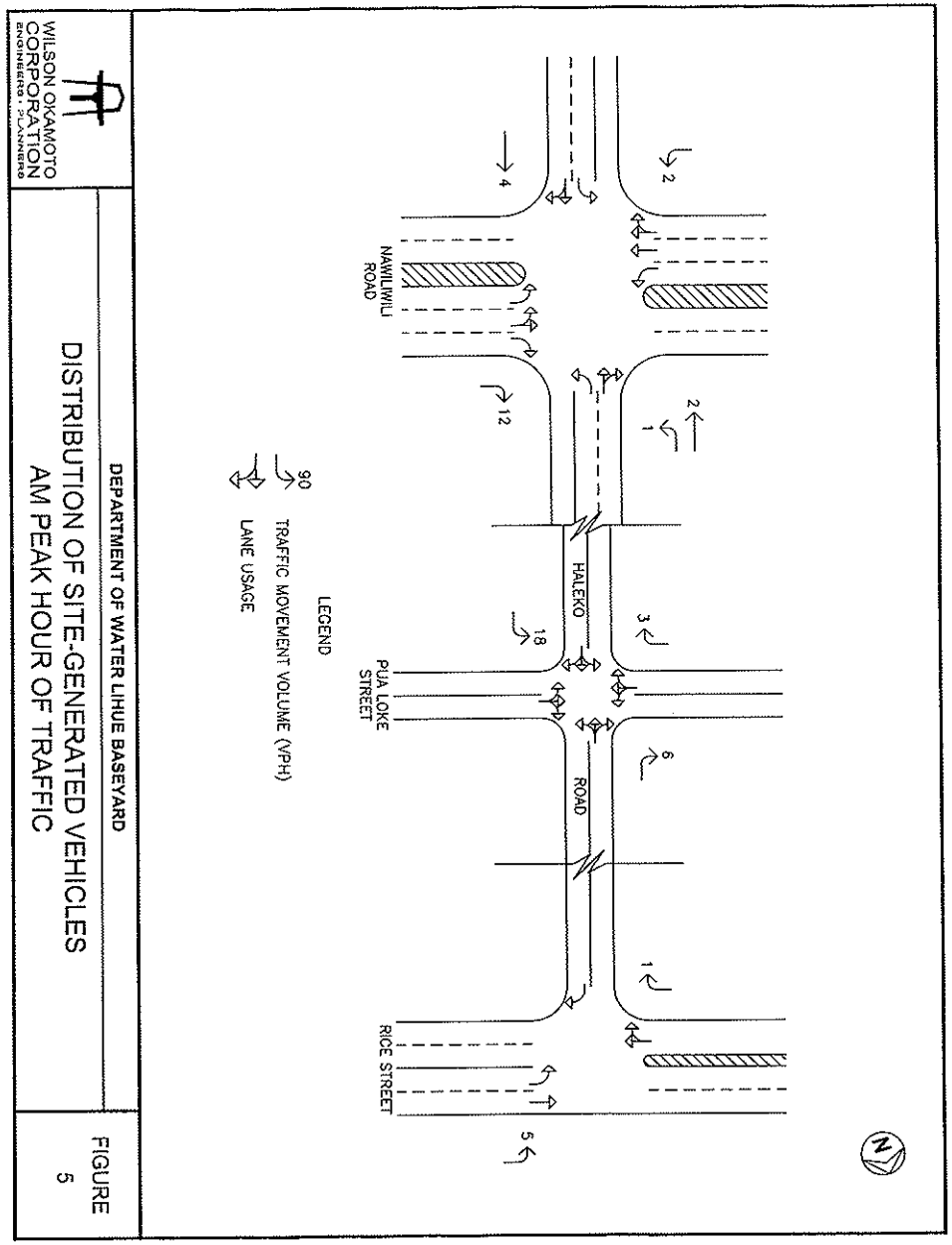
GENERAL OFFICE BUILDING INDEPENDENT VARIABLE: 1,000 sf of development = 17.7		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	24
	EXIT	3
	TOTAL	27
PM PEAK	ENTER	4
	EXIT	22
	TOTAL	26

2. Trip Distribution

Figures 5 and 6 show the distribution of site-generated vehicular trips at the study intersections during the AM and PM peak hours of traffic. Access to the Lihue Baseyard will continue to be provided via Pua Loke Street off Haleko Road. The directional distribution of all site-generated vehicles at the study intersections was assumed to remain similar to existing conditions.

B. Through Traffic Forecasting Methodology

The travel forecast is based upon historical traffic count data obtained from the State Department of Transportation (SDOT), Highway Division survey stations in the vicinity of the project site. The historical data indicates a stable or declining growth in traffic and, as such, a conservative annual traffic growth rate of approximately 2.0% per year was conservatively assumed along Haleko Road, Nawiliwili Road, and Rice Street in the project vicinity. Using 2011 as the Base



Year, a growth factor of 1.08 was applied to the existing traffic demands along those roadways to achieve the projected Year 2015 traffic demands.

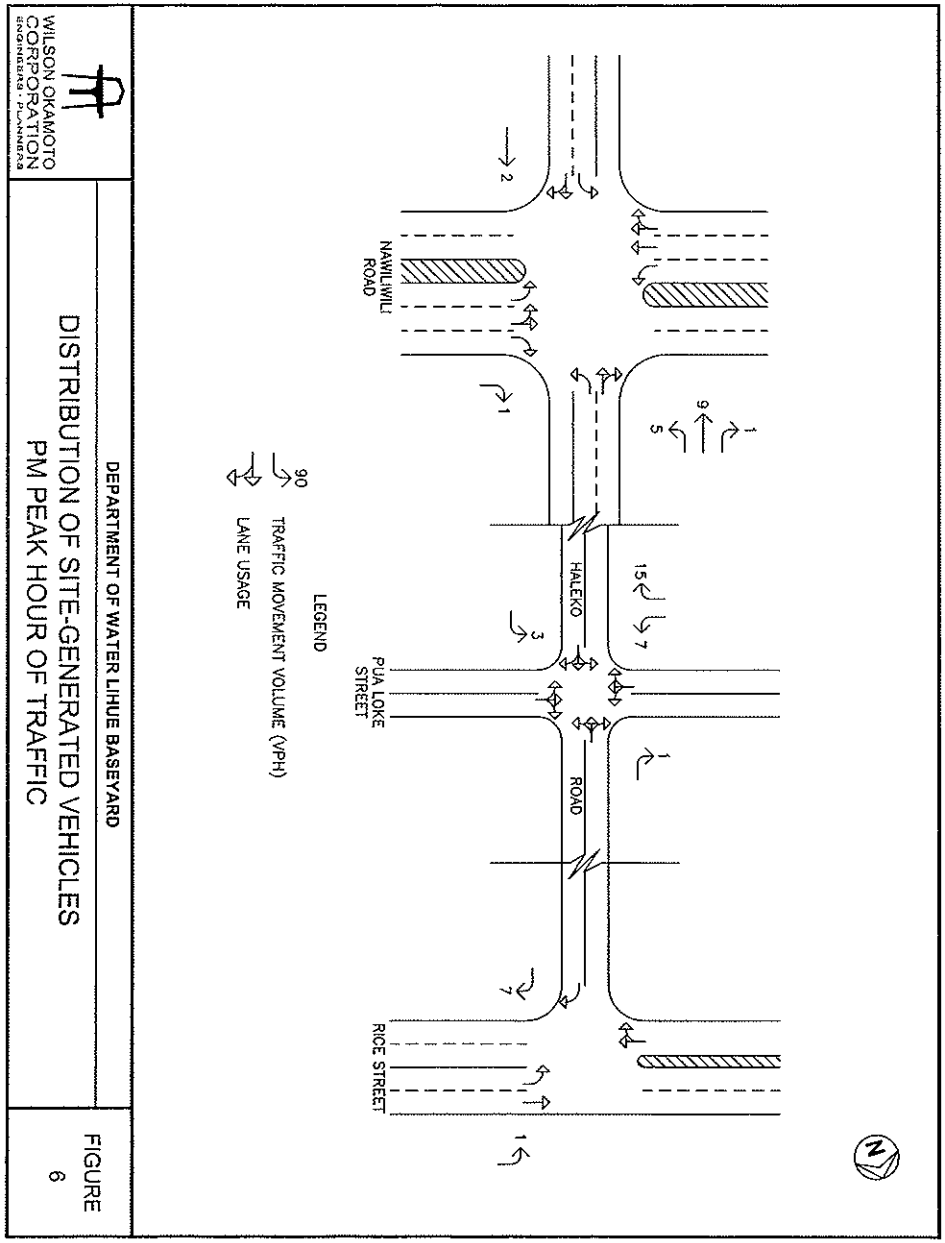
C. Total Traffic Volumes Without Project

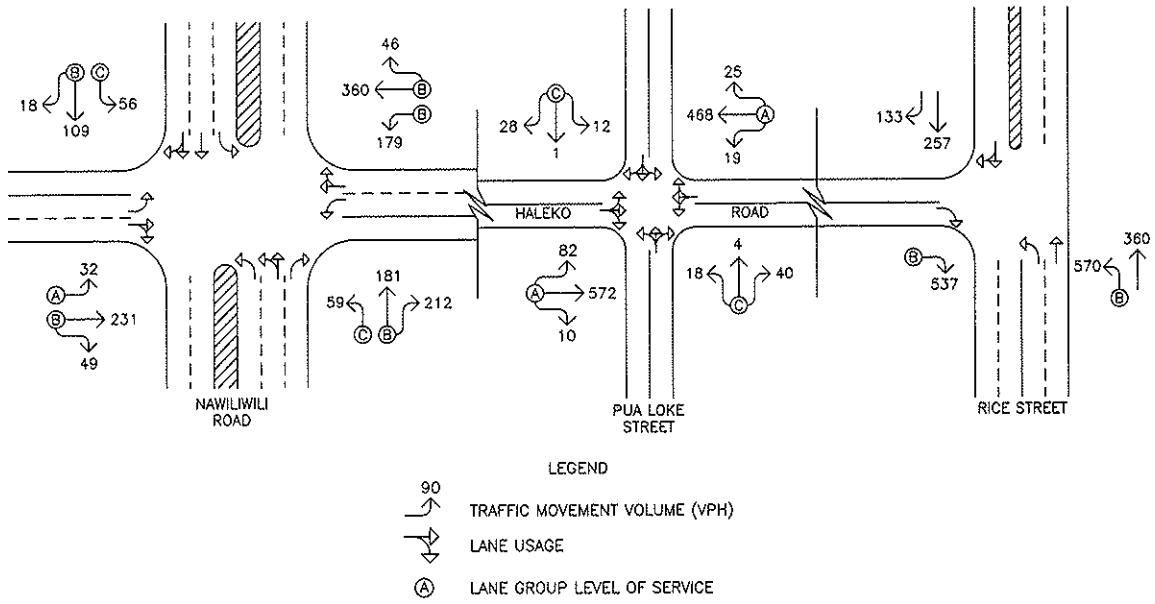
The projected Year 2015 AM and PM peak hour traffic volumes and operating conditions without the implementation of the proposed improvements at the DOW's Lihue Baseyard are shown on Figures 7 and 8, and summarized in Table 2. The existing levels of service are provided for comparison purposes. LOS calculations are included in Appendix D.

Table 2: Existing and Projected Year 2015 (Without Project) Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Exist	Year 2015 w/out Proj	Exist	Year 2015 w/out Proj
Haleko Rd/ Nawiliwili Rd	Eastbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Westbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Northbound	LT	A	B	A	A
		TH-RT	B	B	B	B
	Southbound	LT	B	B	B	B
		TH-RT	B	B	B	B
Haleko Rd/ Pua Loke St	Eastbound	LT-TH-RT	B	B	C	C
	Westbound	LT-TH-RT	B	C	C	C
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-TH-RT	A	A	A	A
Haleko Rd/ Rice St	Westbound	LT	B	B	B	B
	Northbound	RT	B	B	B	B

Traffic operations in the vicinity of the Lihue Baseyard without the implementation of the planned improvements are expected to deteriorate slightly due to ambient growth in traffic along the surrounding roadways. The northbound left-turn traffic movement at the intersection of Haleko Road with Nawiliwili Road and the westbound approach of the intersection with Pua Loke Street are expected to operate at slightly lower levels of service during the AM peak period. The remaining





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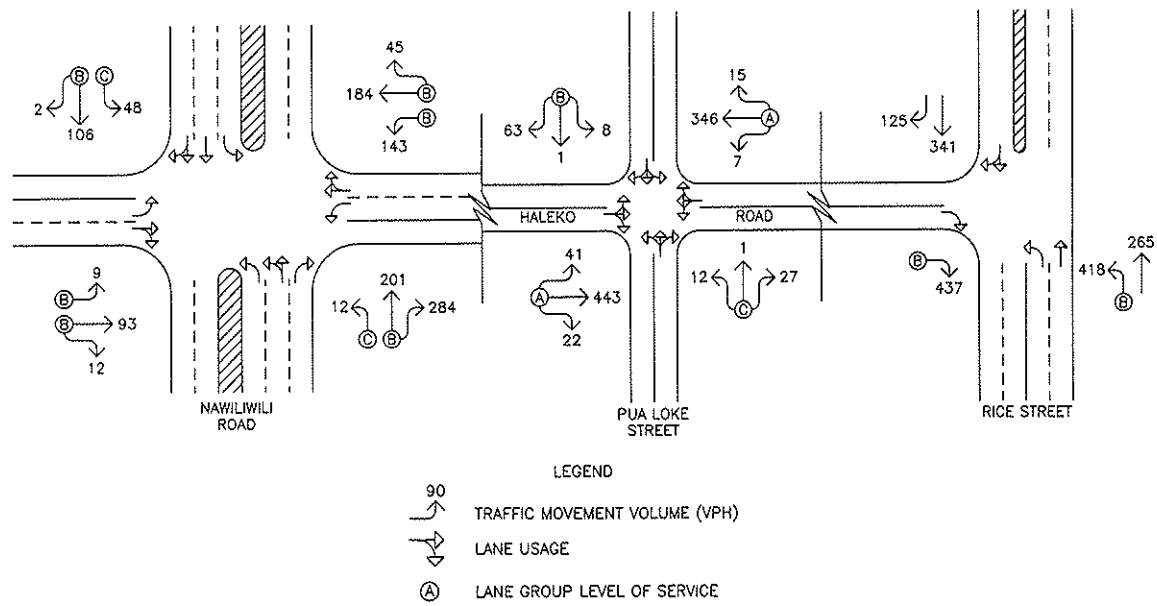
DEPARTMENT OF WATER LIHUE BASEYARD

YEAR 2015 PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 8



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DEPARTMENT OF WATER LIHUE BASEYARD

YEAR 2015 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 7

critical movements at these intersections, as well as, the intersection with Rice Street are expected to continue operating at levels of service similar to existing conditions.

D. Total Traffic Volumes With Project

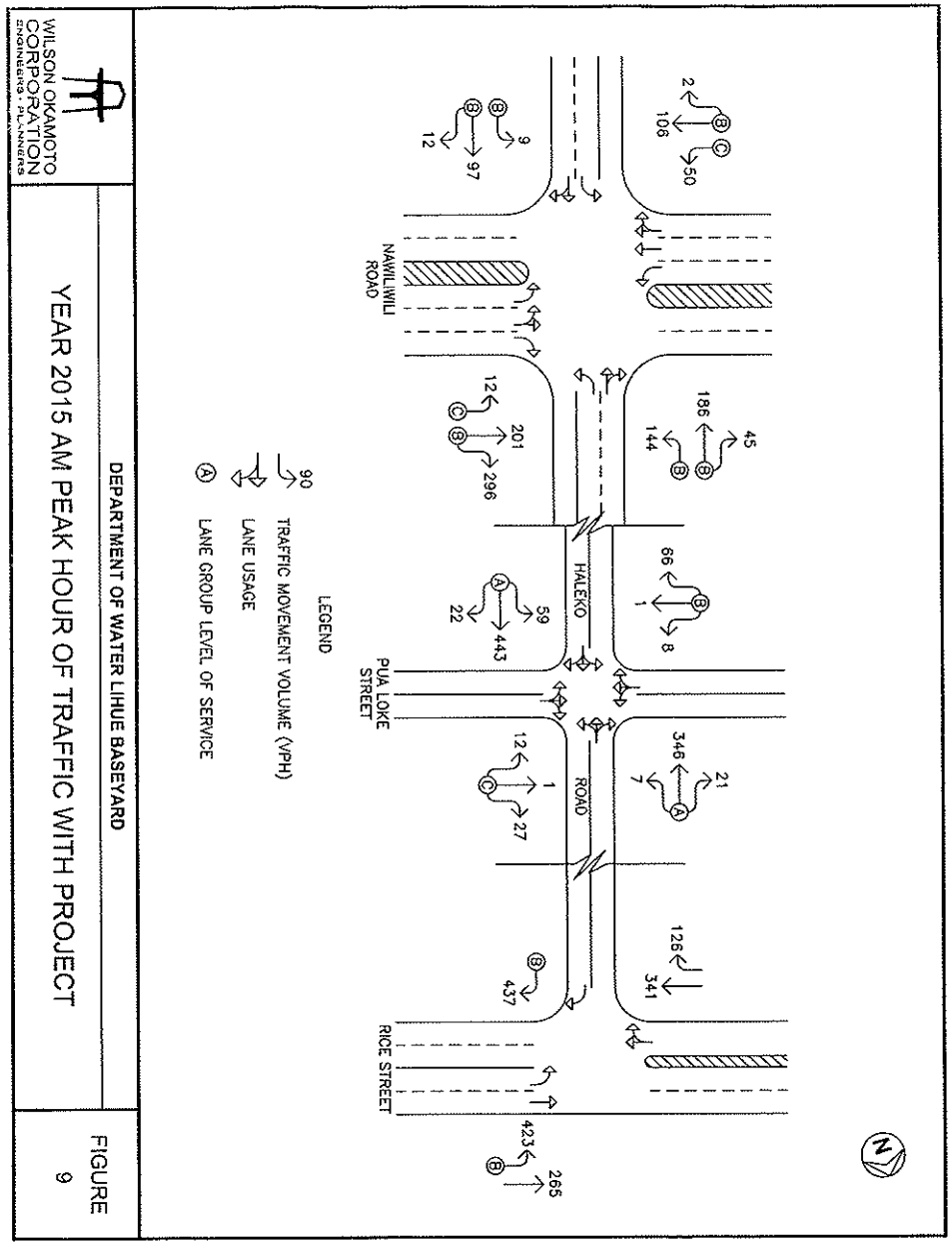
Figures 9 and 10 show the projected Year 2015 cumulative AM and PM peak hour traffic conditions with the implementation of the proposed improvements at DOW's Lihue Baseyard. The cumulative volumes consist of site-generated traffic superimposed over Year 2015 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

V. TRAFFIC IMPACT ANALYSIS

The Year 2015 cumulative AM and PM peak hour traffic conditions with the planned improvements at the Department of Water's Lihue Baseyard are summarized in Table 3. The projected Year 2015 operating conditions without the proposed project are provided for comparison purposes. LOS calculations are included in Appendix E.

Table 3: Projected Year 2015 (Without and With Project) Traffic Operation Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Year 2015 w/out Proj	Year 2015 w/ Proj	Year 2015 w/out Proj	Year 2015 w/ Proj
Haleko Rd/ Nawiliwili Rd	Eastbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Westbound	LT	C	C	C	C
		TH-RT	B	B	B	B
	Northbound	LT	B	B	A	A
		TH-RT	B	B	B	B
	Southbound	LT	B	B	B	B
		TH-RT	B	B	B	B
Haleko Rd/ Pua Loke St	Eastbound	LT-TH-RT	B	B	C	C
	Westbound	LT-TH-RT	C	C	C	C
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-TH-RT	A	A	A	A
Haleko Rd/ Rice St	Westbound	LT	B	B	B	B
	Northbound	RT	B	B	B	B



Traffic operations in the vicinity of DOW's Lihue Baseyard with the implementation of the proposed improvements are expected to operate at levels of service similar to Year 2015 without project conditions despite the addition of site-generated traffic to the surrounding roadways. The critical movements at the intersections of Haleko Road with Nawiliwili Road and Pua Loke Street are expected to continue operating at LOS "C" or better during both peak periods while those at the intersection with Rice Street are expected to continue operating at LOS "B' during both peak periods. In addition, the total traffic volumes entering the intersections of Haleko Road with Nawiliwili Road and Rice Street are expected to increase by less than 2% during both peak periods with the proposed project while those at the intersection with Pua Loke Street are expected to increase by 2-3% during both peak periods. These increases in the total traffic volumes are in the range of daily volume fluctuations in the project vicinity and represent a minimal increase in the overall traffic volumes.

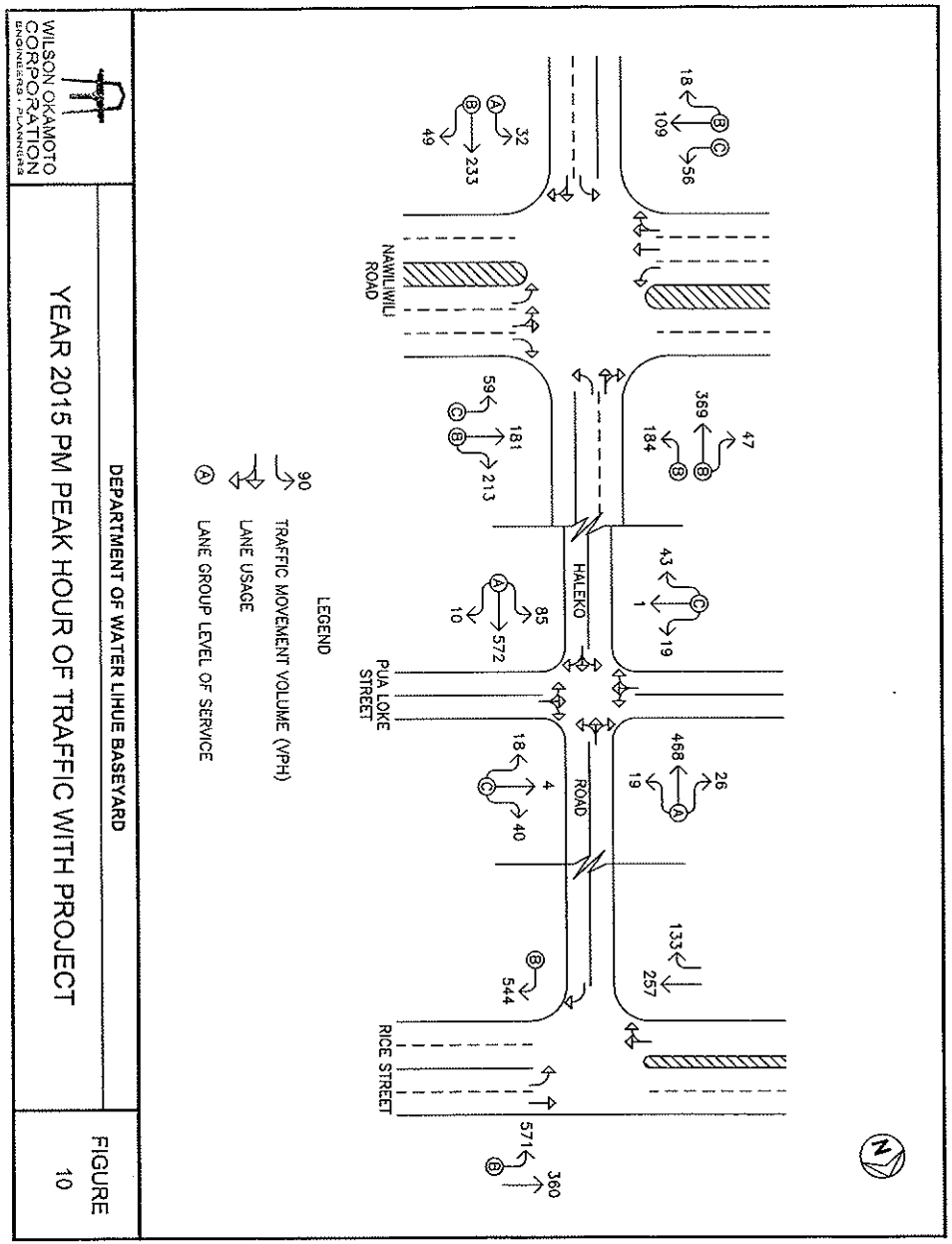
VI. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations of this study associated with the project:

1. Maintain sufficient sight distance for motorists to safely enter and exit all project roadways.
2. Maintain adequate on-site loading and off-loading service areas and prohibit off-site loading operations.
3. Maintain adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on-site to avoid vehicle-reversing maneuvers onto public roadways.
4. Maintain sufficient turning radii at all project roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

VII. CONCLUSION

The Department of Water's plans to expand its existing Lihue Baseyard by constructing a new Administration Building and parking areas on an adjacent parcel. The proposed improvements would alleviate the overcrowding in their existing facilities and support future staffing requirements. With the implementation of the aforementioned



recommendations, the implementation of improvements at DOW's Lihue Baseyard is not expected to have a significant impact on traffic operations in the vicinity. The critical movements at the study intersections along Haleko Road are expected to continue operating at levels of service similar to without project conditions In addition, the total traffic volumes entering the intersections of Haleko Road with Nawiliwili Road and Rice Street are expected to increase by less than 2% during both peak periods with the proposed project while those at the intersection with Pua Loke Street are expected to increase by 2-3% during both peak periods. These increases in the total traffic volumes are in the range of daily volume fluctuations in the project vicinity and represent a minimal increase in the overall traffic volumes.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation

1907 S. Beretana Street, Suite 400
Honolulu, HI 96826

Counter:TU-0650, TU-0652
Counted By:LY, KT
Weather:Clear

File Name : NawHai PM
Site Code : 00000001
Start Date : 5/12/2011
Page No : 1

Groups Printed- Unshifted

	Haleko Road Southbound					Nawiliwili Road Westbound					Kukui Grove Shopping Center Northbound					Nawiliwili Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	37	82	10	0	129	15	46	60	1	122	9	62	7	0	78	15	30	3	3	51	380
03:15 PM	35	76	13	0	124	23	56	44	0	123	12	43	8	0	63	19	31	2	1	53	363
03:30 PM	41	86	10	0	137	15	51	45	0	111	7	45	16	0	68	12	32	11	0	55	371
03:45 PM	37	94	11	1	143	14	46	62	0	122	6	60	13	0	79	18	25	4	3	50	394
Total	150	338	44	1	533	67	199	211	1	478	34	210	44	0	288	64	118	20	7	209	1508
04:00 PM	43	75	10	0	128	15	46	49	0	110	8	69	10	0	87	8	20	7	0	35	360
04:15 PM	44	73	8	0	125	18	50	55	0	123	7	37	4	0	48	13	25	2	0	40	336
04:30 PM	42	91	14	0	147	8	31	30	2	71	9	48	18	0	75	13	31	4	1	49	342
04:45 PM	41	88	16	0	145	12	48	43	0	103	7	34	18	0	59	10	36	6	2	54	361
Total	170	327	48	0	545	53	175	177	2	407	31	188	50	0	269	44	112	19	3	178	1399
05:00 PM	38	83	9	0	130	10	40	33	0	83	10	47	12	0	69	11	22	5	0	38	320
05:15 PM	45	76	6	1	128	9	52	34	0	95	4	44	9	0	57	14	30	6	0	50	330
05:30 PM	31	42	7	0	80	5	37	18	0	60	4	40	10	0	54	5	25	4	0	34	228
05:45 PM	25	33	11	0	69	9	43	29	0	81	7	29	3	0	39	19	27	8	3	57	246
Total	139	234	33	1	407	33	172	114	0	319	25	160	34	0	219	49	104	23	3	179	1124
Grand Total	459	899	125	2	1485	153	546	502	3	1204	90	558	128	0	776	157	334	62	13	566	4031
Apprch %	30.9	60.5	8.4	0.1		12.7	45.3	41.7	0.2		11.6	71.9	16.5	0		27.7	59	11	2.3		
Total %	11.4	22.3	3.1	0	36.8	3.8	13.5	12.5	0.1	29.9	2.2	13.8	3.2	0	19.3	3.9	8.3	1.5	0.3	14	

	Haleko Road Southbound				Nawiliwili Road Westbound				Kukui Grove Shopping Center Northbound				Nawiliwili Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	37	82	10	129	15	46	60	121	9	62	7	78	15	30	3	48	376
03:15 PM	35	76	13	124	23	56	44	123	12	43	8	63	19	31	2	52	362
03:30 PM	41	86	10	137	15	51	45	111	7	45	16	68	12	32	11	55	371
03:45 PM	37	94	11	142	14	46	62	122	6	60	13	79	18	25	4	47	390
Total Volume	150	338	44	532	67	199	211	477	34	210	44	288	64	118	20	202	1499
% App. Total	28.2	63.5	8.3		14	41.7	44.2		11.8	72.9	15.3		31.7	58.4	9.9		
PHF	.915	.899	.846	.937	.728	.888	.851	.970	.708	.847	.688	.911	.842	.922	.455	.918	.961

Wilson Okamoto Corporation

1907 S. Beretana Street, Suite 400
Honolulu, HI 96826

Counter:TU-6650, TU-0652
Counted By:LY, KT
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File Name : NawHai AM
Site Code : 00000001
Start Date : 5/12/2011
Page No : 1

Groups Printed- Unshifted

	Haleko Road Southbound					Nawiliwili Road Westbound					Kukui Grove Shopping Center Driveway Northbound					Nawiliwili Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	4	9	4	0	17	2	16	6	1	25	2	3	0	0	5	3	12	0	0	15	62
06:15 AM	5	6	3	0	14	1	23	14	0	38	0	2	1	0	3	5	21	0	0	26	81
06:30 AM	8	14	10	0	32	2	22	11	0	35	1	9	2	0	12	3	25	1	1	30	109
06:45 AM	12	18	9	0	39	2	30	18	0	50	0	4	1	0	5	3	23	3	2	31	125
Total	29	47	26	0	102	7	91	49	1	148	3	18	4	0	25	14	81	4	3	102	377
07:00 AM	9	25	9	0	43	3	25	23	0	51	1	15	3	0	19	6	23	0	0	29	142
07:15 AM	18	25	9	2	54	6	39	64	0	109	1	11	2	1	15	15	22	0	1	38	216
07:30 AM	34	50	11	0	95	1	49	87	0	137	3	15	2	0	20	8	21	1	0	30	282
07:45 AM	49	70	14	0	133	3	44	68	0	115	1	34	5	0	40	10	25	1	0	36	324
Total	110	170	43	2	325	13	157	242	0	412	6	75	12	1	94	39	91	2	1	133	964
08:00 AM	31	25	8	0	64	1	54	44	0	99	3	26	2	0	31	11	30	0	0	41	235
08:15 AM	22	35	10	0	67	2	42	32	0	76	2	11	4	0	17	8	24	0	0	32	192
08:30 AM	10	29	13	0	52	5	43	27	0	75	1	14	8	0	23	11	21	0	1	33	183
08:45 AM	18	49	11	0	78	11	35	27	0	73	3	10	2	0	15	9	11	2	0	22	188
Total	81	138	42	0	261	19	174	130	0	323	9	61	16	0	86	39	86	2	1	128	798
Grand Total	220	355	111	2	688	39	422	421	1	883	18	154	32	1	205	92	258	8	5	363	2139
Apprch %	32	51.6	16.1	0.3		4.4	47.8	47.7	0.1		8.8	75.1	15.6	0.5		25.3	71.1	2.2	1.4		
Total %	10.3	16.6	5.2	0.1	32.2	1.8	19.7	19.7	0	41.3	0.8	7.2	1.5	0	9.6	4.3	12.1	0.4	0.2	17	

	Haleko Road Southbound				Nawiliwili Road Westbound				Kukui Grove Shopping Center Driveway Northbound				Nawiliwili Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	18	25	9	52	6	39	64	109	1	11	2	14	15	22	0	37	212
07:30 AM	34	50	11	95	1	49	87	137	3	15	2	20	8	21	1	30	282
07:45 AM	49	70	14	133	3	44	68	115	1	34	5	40	10	25	1	36	324
08:00 AM	31	25	8	64	1	54	44	99	3	26	2	31	11	30	0	41	235
Total Volume	132	170	42	344	11	186	263	460	8	86	11	105	44	98	2	144	1053
% App. Total	38.4	49.4	12.2		2.4	40.4	57.2		7.6	81.9	10.5		30.6	68.1	1.4		
PHF	.673	.607	.750	.647	.458	.861	.756	.839	.667	.632	.550	.656	.733	.817	.500	.878	.813

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

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File Name : HalPuaPM
Site Code : 00000002
Start Date : 5/12/2011
Page No : 1

Groups Printed- Unshifted

	Haleko Street Southbound					Pua Loke Road Westbound					Haleko Street Northbound					Pua Loke Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	7	103	6	0	116	6	1	13	0	20	14	123	5	0	142	2	1	8	0	11	289
03:15 PM	5	105	4	0	114	7	0	5	0	12	16	121	1	0	138	1	0	2	1	4	268
03:30 PM	3	93	7	0	103	6	0	5	0	11	20	129	3	0	152	0	0	6	0	6	272
03:45 PM	3	121	6	0	130	7	0	5	0	12	21	134	3	0	158	3	0	8	1	12	312
Total	18	422	23	0	463	26	1	28	0	55	71	507	12	0	590	6	1	24	2	33	1141
04:00 PM	9	115	5	0	129	2	1	7	0	10	14	120	1	0	135	2	0	6	0	8	282
04:15 PM	5	100	5	0	110	3	2	9	0	14	17	133	5	0	155	2	0	10	0	12	291
04:30 PM	2	97	9	0	108	6	1	19	0	26	30	143	1	0	174	5	1	4	0	10	318
04:45 PM	2	74	7	0	83	0	0	5	0	5	49	143	2	0	194	2	0	8	0	10	292
Total	18	386	26	0	430	11	4	40	0	55	110	539	9	0	658	11	1	28	0	40	1183
05:00 PM	2	95	6	0	103	1	0	1	0	2	17	128	0	0	145	0	0	7	0	7	257
05:15 PM	1	96	2	0	99	2	0	0	0	2	17	109	0	0	126	3	0	10	0	13	240
05:30 PM	1	66	1	0	68	1	1	1	0	3	5	73	1	0	79	1	0	9	0	10	160
05:45 PM	0	72	3	0	75	2	0	0	0	2	7	67	0	0	74	1	0	7	0	8	159
Total	4	329	12	0	345	6	1	2	0	9	46	377	1	0	424	5	0	33	0	38	816
Grand Total	40	1137	61	0	1238	43	6	70	0	119	227	1423	22	0	1672	22	2	85	2	111	3140
Apprch %	3.2	91.8	4.9	0		36.1	5	58.8	0		13.6	85.1	1.3	0		19.8	1.8	76.6	1.8		
Total %	1.3	36.2	1.9	0	39.4	1.4	0.2	2.2	0	3.8	7.2	45.3	0.7	0	53.2	0.7	0.1	2.7	0.1	3.5	

	Haleko Street Southbound				Pua Loke Road Westbound				Haleko Street Northbound				Pua Loke Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	3	121	6	130	7	0	5	12	21	134	3	158	3	0	8	11	311
04:00 PM	9	115	5	129	2	1	7	10	14	120	1	135	2	0	6	8	282
04:15 PM	5	100	5	110	3	2	9	14	17	133	5	155	2	0	10	12	291
04:30 PM	2	97	9	108	6	1	19	26	30	143	1	174	5	1	4	10	318
Total Volume	19	433	25	477	18	4	40	62	82	530	10	622	12	1	28	41	1202
% App. Total	4	90.8	5.2		29	6.5	64.5		13.2	85.2	1.6		29.3	2.4	68.3		
PHF	.528	.895	.694	.917	.643	.500	.526	.596	.683	.927	.500	.894	.600	.250	.700	.854	.945

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
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Counter:0649
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Start Date : 5/12/2011
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Groups Printed- Unshifted

	Haleko Street Southbound					Pua Loke Street Westbound					Haleko Street Northbound					Pua Loke Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	5	6	2	0	15	0	0	4	0	4	2	9	3	0	14	0	1	1	0	2	35
06:15 AM	5	13	1	0	19	0	0	1	0	1	5	24	3	0	32	1	0	2	0	3	55
06:30 AM	5	21	3	0	29	3	0	5	1	9	1	31	4	0	36	1	0	5	0	6	80
06:45 AM	2	20	3	0	25	0	0	3	2	5	1	39	3	0	43	0	0	7	0	7	80
Total	17	62	9	0	88	3	0	13	3	19	9	103	13	0	125	2	1	15	0	18	250
07:00 AM	4	34	4	0	42	5	0	5	0	10	5	50	4	0	59	0	0	11	0	11	122
07:15 AM	5	69	2	0	76	1	0	4	0	5	5	73	7	0	85	3	0	25	0	28	194
07:30 AM	9	103	4	0	116	3	1	4	0	8	12	107	8	0	127	0	0	14	0	14	265
07:45 AM	14	84	5	0	103	4	0	10	0	14	17	148	4	0	169	3	1	10	0	14	300
Total	32	290	15	0	337	13	1	23	0	37	39	378	23	0	440	6	1	60	0	67	881
08:00 AM	7	64	4	0	75	4	0	9	0	13	7	82	3	0	92	2	0	14	0	16	196
08:15 AM	8	42	6	0	56	8	0	5	0	13	6	68	4	0	78	2	0	11	0	13	160
08:30 AM	7	43	2	0	52	4	0	7	0	11	11	78	4	0	93	1	1	5	0	7	163
08:45 AM	4	54	1	0	59	6	0	8	0	14	3	72	8	0	83	1	1	3	0	5	161
Total	26	203	13	0	242	22	0	29	0	51	27	300	19	0	346	6	2	33	0	41	680
Grand Total	75	555	37	0	667	38	1	65	3	107	75	781	55	0	911	14	4	108	0	126	1811
Apprch %	11.2	83.2	5.5	0		35.5	0.9	60.7	2.8		8.2	85.7	6	0		11.1	3.2	85.7	0		
Total %	4.1	30.6	2	0	36.8	2.1	0.1	3.6	0.2	5.9	4.1	43.1	3	0	50.3	0.8	0.2	6	0	7	

	Haleko Street Southbound				Pua Loke Street Westbound				Haleko Street Northbound				Pua Loke Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	69	2	76	1	0	4	5	5	73	7	85	3	0	25	28	194
07:30 AM	9	103	4	116	3	1	4	8	12	107	8	127	0	0	14	14	265
07:45 AM	14	84	5	103	4	0	10	14	17	148	4	169	3	1	10	14	300
08:00 AM	7	64	4	75	4	0	9	13	7	82	3	92	2	0	14	16	196
Total Volume	35	320	15	370	12	1	27	40	41	410	22	473	8	1	63	72	955
% App. Total	9.5	86.5	4.1		30	2.5	67.5		8.7	86.7	4.7		11.1	1.4	87.5		
PHF	.625	.777	.750	.797	.750	.250	.675	.714	.603	.693	.688	.700	.667	.250	.630	.643	.796

Wilson Okamoto Corporation

1907 S. Beretana Street, Suite 400
Honolulu, HI 96826

Counter:TU-0651
Counted By:TO
Weather:Clear

File Name : HalRic PM
Site Code : 00000003
Start Date : 5/12/2011
Page No : 1

Groups Printed- Unshifted

	Southbound	Rice Street Westbound					Haleko Road Northbound					Rice Street Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	110	81	0	1	192	0	0	119	0	119	0	71	29	0	100	411
03:15 PM	0	110	84	0	1	195	0	0	114	2	116	0	67	30	2	99	410
03:30 PM	0	113	91	0	4	208	0	0	123	2	125	0	77	37	0	114	447
03:45 PM	0	127	69	0	1	197	0	0	126	0	126	0	67	32	1	100	423
Total	0	460	325	0	7	792	0	0	482	4	486	0	282	128	3	413	1691
04:00 PM	0	102	89	0	2	193	0	0	137	0	137	0	65	29	0	94	424
04:15 PM	0	144	79	0	0	223	0	0	113	0	113	0	58	21	0	79	415
04:30 PM	0	155	96	0	0	251	0	0	121	0	121	0	48	41	0	89	461
04:45 PM	0	116	67	0	0	183	0	0	85	1	86	0	70	63	0	133	402
Total	0	517	331	0	2	850	0	0	456	1	457	0	241	154	0	395	1702
05:00 PM	0	112	64	0	0	176	0	0	106	0	106	0	52	47	0	99	381
05:15 PM	0	85	75	0	0	160	0	0	104	0	104	0	51	47	1	99	363
05:30 PM	0	68	55	0	0	123	0	0	82	0	82	0	49	12	0	61	266
05:45 PM	0	64	54	0	0	118	0	0	77	0	77	0	56	17	0	73	268
Total	0	329	248	0	0	577	0	0	369	0	369	0	208	123	1	332	1278
Grand Total	0	1306	904	0	9	2219	0	0	1307	5	1312	0	731	405	4	1140	4671
Apprch %		58.9	40.7	0	0.4		0	0	99.6	0.4		0	64.1	35.5	0.4		
Total %	0	28	19.4	0	0.2	47.5	0	0	28	0.1	28.1	0	15.6	8.7	0.1	24.4	

	Southbound	Rice Street Westbound				Haleko Road Northbound				Rice Street Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 03:45 PM														
03:45 PM	0	127	69	0	196	0	0	126	126	0	67	32	99	421
04:00 PM	0	102	89	0	191	0	0	137	137	0	65	29	94	422
04:15 PM	0	144	79	0	223	0	0	113	113	0	58	21	79	415
04:30 PM	0	155	96	0	251	0	0	121	121	0	48	41	89	461
Total Volume	0	528	333	0	861	0	0	497	497	0	238	123	361	1719
% App. Total		61.3	38.7	0		0	0	100		0	65.9	34.1		
PHF	.000	.852	.867	.000	.858	.000	.000	.907	.907	.000	.888	.750	.912	.932

Wilson Okamoto Corporation

1907 S. Beretana Street, Suite 400
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File Name : HalRic AM
Site Code : 00000003
Start Date : 5/12/2011
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Groups Printed- Unshifted

	Southbound	Rice Street Westbound					Haleko Road Northbound					Rice Street Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	21	23	0	0	44	0	0	12	0	12	0	50	2	0	52	108
06:15 AM	0	21	24	0	0	45	0	0	19	0	19	0	51	9	1	61	125
06:30 AM	0	28	36	0	1	65	0	0	27	0	27	0	47	14	0	61	153
06:45 AM	0	35	36	0	0	71	0	0	31	0	31	0	69	15	0	84	186
Total	0	105	119	0	1	225	0	0	89	0	89	0	217	40	1	258	572
07:00 AM	0	53	44	0	0	97	0	0	49	3	52	0	70	15	0	85	234
07:15 AM	0	70	55	0	0	125	0	0	105	1	106	0	84	18	2	104	335
07:30 AM	0	120	74	0	0	194	0	0	121	1	122	0	88	36	0	124	440
07:45 AM	0	137	67	0	0	204	0	0	105	1	106	0	69	36	1	106	416
Total	0	380	240	0	0	620	0	0	380	6	386	0	311	105	3	419	1425
08:00 AM	0	60	49	0	2	111	0	0	74	0	74	0	75	26	0	101	286
08:15 AM	0	69	61	0	1	131	0	0	56	1	57	0	67	19	0	86	274
08:30 AM	0	77	59	0	0	136	0	0	54	0	54	0	79	16	0	95	285
08:45 AM	0	72	60	0	4	136	0	0	69	0	69	0	67	25	0	92	297
Total	0	278	229	0	7	514	0	0	253	1	254	0	288	86	0	374	1142
Grand Total	0	763	588	0	8	1359	0	0	722	7	729	0	816	231	4	1051	3139
Apprch %		56.1	43.3	0	0.6		0	0	99	1		0	77.6	22	0.4		
Total %	0	24.3	18.7	0	0.3	43.3	0	0	23	0.2	23.2	0	26	7.4	0.1	33.5	

	Southbound	Rice Street Westbound				Haleko Road Northbound				Rice Street Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 07:15 AM														
07:15 AM	0	70	55	0	125	0	0	105	105	0	84	18	102	332
07:30 AM	0	120	74	0	194	0	0	121	121	0	88	36	124	439
07:45 AM	0	137	67	0	204	0	0	105	105	0	69	36	105	414
08:00 AM	0	60	49	0	109	0	0	74	74	0	75	26	101	284
Total Volume	0	387	245	0	632	0	0	405	405	0	316	116	432	1469
% App. Total		61.2	38.8	0		0	0	100		0	73.1	26.9		
PHF	.000	.706	.828	.000	.775	.000	.000	.837	.837	.000	.898	.806	.871	.837

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

"Highway Capacity Manual," Transportation Research Board, 2000.

Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↱		↰	↱	
Volume (vph)	44	98	2	11	186	263	8	86	11	132	170	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.91		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3530		1770	3228		1770	1830		1770	1807	
Flt Permitted	0.95	1.00		0.95	1.00		0.51	1.00		0.66	1.00	
Satd. Flow (perm)	1770	3530		1770	3228		954	1830		1236	1807	
Peak-hour factor, PHF	0.88	0.88	0.88	0.84	0.84	0.84	0.66	0.66	0.66	0.65	0.65	0.65
Adj. Flow (vph)	50	111	2	13	221	313	12	130	17	203	262	65
RTOR Reduction (vph)	0	1	0	0	232	0	0	6	0	0	12	0
Lane Group Flow (vph)	50	112	0	13	302	0	12	141	0	203	315	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	2.3	12.7		0.7	11.1		14.4	14.4		14.4	14.4	
Effective Green, g (s)	2.3	12.7		0.7	11.1		14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.05	0.30		0.02	0.26		0.34	0.34		0.34	0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	95	1047		29	837		321	616		416	608	
v/s Ratio Prot	c0.03	0.03		0.01	c0.09			0.08			c0.17	
v/s Ratio Perm							0.01			0.16		
v/c Ratio	0.53	0.11		0.45	0.36		0.04	0.23		0.49	0.52	
Uniform Delay, d1	19.7	10.9		20.9	13.0		9.5	10.2		11.3	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.2	0.0		10.6	0.3		0.0	0.2		0.9	0.7	
Delay (s)	24.9	11.0		31.5	13.2		9.6	10.4		12.2	12.2	
Level of Service	C	B		C	B		A	B		B	B	
Approach Delay (s)		15.2			13.7			10.3			12.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: Nawiliwili & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	101	17	55	173	196	30	214	45	166	333	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.92		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3463		1770	3257		1770	1814		1770	1831	
Flt Permitted	0.95	1.00		0.95	1.00		0.42	1.00		0.54	1.00	
Satd. Flow (perm)	1770	3463		1770	3257		782	1814		1002	1831	
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	58	113	19	64	201	228	36	258	54	180	362	47
RTOR Reduction (vph)	0	15	0	0	180	0	0	10	0	0	6	0
Lane Group Flow (vph)	58	117	0	64	249	0	36	302	0	180	403	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.9	9.5		4.1	9.7		17.4	17.4		17.4	17.4	
Effective Green, g (s)	3.9	9.5		4.1	9.7		17.4	17.4		17.4	17.4	
Actuated g/C Ratio	0.08	0.21		0.09	0.21		0.38	0.38		0.38	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	715		158	687		296	686		379	693	
v/s Ratio Prot	0.03	0.03		c0.04	c0.08			0.17			c0.22	
v/s Ratio Perm							0.05			0.18		
v/c Ratio	0.39	0.16		0.41	0.36		0.12	0.44		0.47	0.58	
Uniform Delay, d1	19.9	15.0		19.8	15.5		9.3	10.7		10.8	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1		1.7	0.3		0.2	0.5		0.9	1.2	
Delay (s)	21.6	15.1		21.5	15.8		9.5	11.1		11.8	12.6	
Level of Service	C	B		C	B		A	B		B	B	
Approach Delay (s)		17.1			16.6			11.0			12.4	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM Average Control Delay	13.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	1	63	12	1	27	41	410	22	7	320	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.71	0.71	0.71	0.70	0.70	0.70	0.80	0.80	0.80
Hourly flow rate (vph)	12	2	98	17	1	38	59	586	31	9	400	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1184	1161	409	1245	1155	601	419			617		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1184	1161	409	1245	1155	601	419			617		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	95	99	90	92	100	95	95			99		
cM capacity (veh/h)	257	299	985	223	301	791	1140			963		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	112	56	676	428
Volume Left	12	17	59	9
Volume Right	98	38	31	19
cSH	731	439	1140	963
Volume to Capacity	0.15	0.13	0.05	0.01
Queue Length 95th (ft)	14	11	4	1
Control Delay (s)	10.8	14.4	1.3	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.8	14.4	1.3	0.3
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1	28	18	4	40	82	530	10	19	433	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.60	0.60	0.60	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	14	1	33	30	7	67	92	596	11	21	471	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1381	1317	484	1344	1325	601	498			607		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1381	1317	484	1344	1325	601	498			607		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	92	100	96	85	97	92	91			98		
cM capacity (veh/h)	178	236	904	200	234	791	1066			971		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	103	699	518
Volume Left	14	30	92	21
Volume Right	33	67	11	27
cSH	399	394	1066	971
Volume to Capacity	0.12	0.26	0.09	0.02
Queue Length 95th (ft)	10	26	7	2
Control Delay (s)	15.3	17.4	2.2	0.6
Lane LOS	C	C	A	A
Approach Delay (s)	15.3	17.4	2.2	0.6
Approach LOS	C	C		

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	73.2%	ICU Level of Service	D	
Analysis Period (min)	15			

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
6: Rice & Haleko

6/14/2011

Movement	EBL	EBR	WBL	WBT	WBR	NBR
Lane Configurations						
Volume (veh/h)	316	116	387	245	0	405
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.78	0.78	0.84	0.84
Hourly flow rate (vph)	363	133	496	314	0	482
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			497		1736	430
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			497		1736	430
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			54		100	50
cM capacity (veh/h)			1067		51	962

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	497	496	314	482
Volume Left	0	496	0	0
Volume Right	133	0	0	482
cSH	1700	1067	1700	962
Volume to Capacity	0.29	0.46	0.18	0.50
Queue Length 95th (ft)	0	63	0	72
Control Delay (s)	0.0	11.3	0.0	12.4
Lane LOS		B		B
Approach Delay (s)	0.0	6.9		12.4
Approach LOS				B

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	55.4%	ICU Level of Service	B	
Analysis Period (min)	15			

* User Entered Value

Movement	EBL	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	238	123	528	333	0	497
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	262	135	614	387	0	546
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			397		1944	329
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			397		1944	329
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			47		100	49
cM capacity (veh/h)			1162		34	1079

Direction, Location	EB 1	WB 1	WB 2	NB 1
Volume Total	397	614	387	546
Volume Left	0	614	0	0
Volume Right	135	0	0	546
cSH	1700	1162	1700	1079
Volume to Capacity	0.23	0.53	0.23	0.51
Queue Length 95th (ft)	0	80	0	74
Control Delay (s)	0.0	11.5	0.0	11.7
Lane LOS		B		B
Approach Delay (s)	0.0	7.1		11.7
Approach LOS				B

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2015 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

HCM Signalized Intersection Capacity Analysis
3: Nawiliwili & Haleko

6/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	106	2	12	201	284	9	93	12	143	184	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.91		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3531		1770	3228		1770	1831		1770	1808	
Flt Permitted	0.95	1.00		0.95	1.00		0.45	1.00		0.66	1.00	
Satd. Flow (perm)	1770	3531		1770	3228		845	1831		1222	1808	
Peak-hour factor, PHF	0.88	0.88	0.88	0.84	0.84	0.84	0.66	0.66	0.66	0.65	0.65	0.65
Adj. Flow (vph)	55	120	2	14	239	338	14	141	18	220	283	69
RTOR Reduction (vph)	0	1	0	0	246	0	0	6	0	0	12	0
Lane Group Flow (vph)	55	121	0	14	331	0	14	153	0	220	340	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.8	15.8		0.8	12.8		15.3	15.3		15.3	15.3	
Effective Green, g (s)	3.8	15.8		0.8	12.8		15.3	15.3		15.3	15.3	
Actuated g/C Ratio	0.08	0.34		0.02	0.27		0.33	0.33		0.33	0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	143	1190		30	881		276	597		399	590	
v/s Ratio Prot	c0.03	c0.03		0.01	c0.10			0.08			c0.19	
v/s Ratio Perm							0.02			0.18		
v/c Ratio	0.38	0.10		0.47	0.38		0.05	0.26		0.55	0.58	
Uniform Delay, d1	20.4	10.7		22.8	13.8		10.8	11.6		13.0	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.0		11.0	0.3		0.1	0.2		1.6	1.4	
Delay (s)	22.2	10.7		33.9	14.1		10.9	11.8		14.6	14.5	
Level of Service	C	B		C	B		B	B		B	B	
Approach Delay (s)		14.3			14.6			11.8			14.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	20.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Nawiliwili & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	109	18	59	187	212	32	231	49	179	360	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.92		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3257		1770	1814		1770	1831	
Flt Permitted	0.95	1.00		0.95	1.00		0.39	1.00		0.51	1.00	
Satd. Flow (perm)	1770	3464		1770	3257		722	1814		943	1831	
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	63	122	20	69	217	247	39	278	59	195	391	50
RTOR Reduction (vph)	0	14	0	0	194	0	0	10	0	0	6	0
Lane Group Flow (vph)	63	128	0	69	270	0	39	327	0	195	435	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.1	10.2		4.3	10.4		19.4	19.4		19.4	19.4	
Effective Green, g (s)	4.1	10.2		4.3	10.4		19.4	19.4		19.4	19.4	
Actuated g/C Ratio	0.08	0.21		0.09	0.21		0.40	0.40		0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	723		156	693		286	720		374	726	
v/s Ratio Prot	0.04	0.04		c0.04	c0.08			0.18			c0.24	
v/s Ratio Perm							0.05			0.21		
v/c Ratio	0.43	0.18		0.44	0.39		0.14	0.45		0.52	0.60	
Uniform Delay, d1	21.3	15.9		21.2	16.5		9.4	10.9		11.2	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.1		2.0	0.4		0.2	0.5		1.3	1.3	
Delay (s)	23.2	16.0		23.2	16.9		9.6	11.3		12.5	13.0	
Level of Service	C	B		C	B		A	B		B	B	
Approach Delay (s)		18.2			17.7			11.1			12.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	1	63	12	1	27	41	443	22	7	346	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.71	0.71	0.71	0.70	0.70	0.70	0.80	0.80	0.80
Hourly flow rate (vph)	12	2	98	17	1	38	59	633	31	9	432	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1264	1241	442	1324	1234	649	451			664		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1264	1241	442	1324	1234	649	451			664		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	95	99	90	91	99	95	95			99		
cM capacity (veh/h)	229	271	949	199	273	749	1109			925		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	112	56	723	460
Volume Left	12	17	59	9
Volume Right	98	38	31	19
cSH	686	399	1109	925
Volume to Capacity	0.16	0.14	0.05	0.01
Queue Length 95th (ft)	15	12	4	1
Control Delay (s)	11.3	15.5	1.4	0.3
Lane LOS	B	C	A	A
Approach Delay (s)	11.3	15.5	1.4	0.3
Approach LOS	B	C		

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	58.7%	ICU Level of Service	B	
Analysis Period (min)	15			

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	1	28	18	4	40	82	572	10	19	468	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.60	0.60	0.60	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	14	1	33	30	7	67	92	643	11	21	509	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1466	1402	522	1430	1410	648	536			654		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1466	1402	522	1430	1410	648	536			654		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	91	99	96	83	97	91	91			98		
cM capacity (veh/h)	156	213	866	177	211	749	1032			933		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	103	746	557
Volume Left	14	30	92	21
Volume Right	33	67	11	27
cSH	360	356	1032	933
Volume to Capacity	0.13	0.29	0.09	0.02
Queue Length 95th (ft)	11	30	7	2
Control Delay (s)	16.6	19.2	2.2	0.6
Lane LOS	C	C	A	A
Approach Delay (s)	16.6	19.2	2.2	0.6
Approach LOS	C	C		

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	77.1%	ICU Level of Service	D	
Analysis Period (min)	15			

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
6: Rice & Haleko

6/15/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	341	125	418	265	0	437
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.78	0.78	0.84	0.84
Hourly flow rate (vph)	392	144	536	340	0	520
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			536		1875	464
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			536		1875	464
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			48		100	44
cM capacity (veh/h)			1032		38	926

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	536	536	340	520
Volume Left	0	536	0	0
Volume Right	144	0	0	520
cSH	1700	1032	1700	926
Volume to Capacity	0.32	0.52	0.20	0.56
Queue Length 95th (ft)	0	77	0	90
Control Delay (s)	0.0	12.2	0.0	13.8
Lane LOS		B		B
Approach Delay (s)	0.0	7.5		13.8
Approach LOS				B

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
6: Rice & Haleko

6/14/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	257	133	570	360	0	537
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	282	146	663	419	0	590
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			429		2100	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			429		2100	355
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			41		100	44
cM capacity (veh/h)			1131		24	1047

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	429	663	419	590
Volume Left	0	663	0	0
Volume Right	146	0	0	590
cSH	1700	1131	1700	1047
Volume to Capacity	0.25	0.59	0.25	0.56
Queue Length 95th (ft)	0	99	0	91
Control Delay (s)	0.0	12.6	0.0	12.8
Lane LOS		B		B
Approach Delay (s)	0.0	7.7		12.8
Approach LOS				B

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2015 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCM Signalized Intersection Capacity Analysis
3: Nawiliwili & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	106	2	12	201	296	9	97	12	144	186	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.91		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3531		1770	3223		1770	1832		1770	1808	
Flt Permitted	0.95	1.00		0.95	1.00		0.45	1.00		0.65	1.00	
Satd. Flow (perm)	1770	3531		1770	3223		840	1832		1216	1808	
Peak-hour factor, PHF	0.88	0.88	0.88	0.84	0.84	0.84	0.66	0.66	0.66	0.65	0.65	0.65
Adj. Flow (vph)	57	120	2	14	239	352	14	147	18	222	286	69
RTOR Reduction (vph)	0	1	0	0	256	0	0	6	0	0	12	0
Lane Group Flow (vph)	57	121	0	14	335	0	14	159	0	222	343	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	3.9	16.1		0.9	13.1		16.1	16.1		16.1	16.1	
Effective Green, g (s)	3.9	16.1		0.9	13.1		16.1	16.1		16.1	16.1	
Actuated g/C Ratio	0.08	0.33		0.02	0.27		0.33	0.33		0.33	0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	144	1182		33	878		281	613		407	605	
v/s Ratio Prot	c0.03	c0.03		0.01	c0.10			0.09			c0.19	
v/s Ratio Perm							0.02			0.18		
v/c Ratio	0.40	0.10		0.42	0.38		0.05	0.26		0.55	0.57	
Uniform Delay, d1	21.0	11.0		23.3	14.2		10.8	11.7		13.0	13.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.0		8.6	0.3		0.1	0.2		1.5	1.2	
Delay (s)	22.8	11.1		31.9	14.5		10.9	11.9		14.5	14.4	
Level of Service	C	B		C	B		B	B		B	B	
Approach Delay (s)		14.8			14.9			11.8			14.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Nawiliwili & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	109	18	59	187	213	32	233	49	184	369	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.92		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3256		1770	1814		1770	1831	
Flt Permitted	0.95	1.00		0.95	1.00		0.38	1.00		0.50	1.00	
Satd. Flow (perm)	1770	3464		1770	3256		704	1814		938	1831	
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	63	122	20	69	217	248	39	281	59	200	401	51
RTOR Reduction (vph)	0	14	0	0	195	0	0	10	0	0	6	0
Lane Group Flow (vph)	63	128	0	69	270	0	39	330	0	200	446	0
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	4.1	10.3		4.3	10.5		19.9	19.9		19.9	19.9	
Effective Green, g (s)	4.1	10.3		4.3	10.5		19.9	19.9		19.9	19.9	
Actuated g/C Ratio	0.08	0.21		0.09	0.21		0.40	0.40		0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	147	721		154	691		283	729		377	736	
v/s Ratio Prot	0.04	0.04		c0.04	c0.08			0.18			c0.24	
v/s Ratio Perm							0.06			0.21		
v/c Ratio	0.43	0.18		0.45	0.39		0.14	0.45		0.53	0.61	
Uniform Delay, d1	21.6	16.1		21.5	16.7		9.4	10.8		11.2	11.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.1		2.1	0.4		0.2	0.4		1.4	1.4	
Delay (s)	23.6	16.2		23.5	17.1		9.6	11.3		12.7	13.1	
Level of Service	C	B		C	B		A	B		B	B	
Approach Delay (s)		18.5			17.9			11.1			13.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	1	66	12	1	27	59	443	22	7	346	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.64	0.64	0.71	0.71	0.71	0.70	0.70	0.70	0.80	0.80	0.80
Hourly flow rate (vph)	12	2	103	17	1	38	84	633	31	9	432	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1319	1296	446	1384	1293	649	459			664		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1319	1296	446	1384	1293	649	459			664		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	94	99	89	91	99	95	92			99		
cM capacity (veh/h)	208	248	945	178	249	749	1102			925		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	749	468
Volume Left	12	17	84	9
Volume Right	103	38	31	26
cSH	667	372	1102	925
Volume to Capacity	0.18	0.15	0.08	0.01
Queue Length 95th (ft)	16	13	6	1
Control Delay (s)	11.5	16.4	1.9	0.3
Lane LOS	B	C	A	A
Approach Delay (s)	11.5	16.4	1.9	0.3
Approach LOS	B	C		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
2: Hala & Haleko

6/14/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	1	43	18	4	40	85	572	10	19	468	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.60	0.60	0.60	0.89	0.89	0.89	0.92	0.92	0.92
Hourly flow rate (vph)	22	1	51	30	7	67	96	643	11	21	509	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								737				
pX, platoon unblocked												
vC, conflicting volume	1473	1409	523	1455	1418	648	537			654		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1473	1409	523	1455	1418	648	537			654		
tC, single (s)	*6.1	*5.5	*5.2	*6.1	*5.5	*5.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	*2.5	*3.0	*2.3	*2.5	*3.0	*2.3	2.2			2.2		
p0 queue free %	85	99	94	82	97	91	91			98		
cM capacity (veh/h)	154	210	865	167	208	749	1031			933		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	74	103	749	558
Volume Left	22	30	96	21
Volume Right	51	67	11	28
cSH	354	343	1031	933
Volume to Capacity	0.21	0.30	0.09	0.02
Queue Length 95th (ft)	19	31	8	2
Control Delay (s)	17.8	19.9	2.3	0.6
Lane LOS	C	C	A	A
Approach Delay (s)	17.8	19.9	2.3	0.6
Approach LOS	C	C		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
6: Rice & Haleko

6/14/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	341	126	423	265	0	437
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.78	0.78	0.84	0.84
Hourly flow rate (vph)	392	145	542	340	0	520
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			537		1889	464
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			537		1889	464
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			47		100	44
cM capacity (veh/h)			1031		37	925

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	537	542	340	520
Volume Left	0	542	0	0
Volume Right	145	0	0	520
cSH	1700	1031	1700	925
Volume to Capacity	0.32	0.53	0.20	0.56
Queue Length 95th (ft)	0	79	0	90
Control Delay (s)	0.0	12.3	0.0	13.8
Lane LOS		B		B
Approach Delay (s)	0.0	7.6		13.8
Approach LOS				B

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

Movement	EBL	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	257	133	571	360	0	544
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	282	146	664	419	0	598
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			429		2102	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			429		2102	355
tC, single (s)			4.1		6.4	*5.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	*2.3
p0 queue free %			41		100	43
cM capacity (veh/h)			1131		23	1047

Direction, Location	EB 1	WB 1	NB 1	SB 1
Volume Total	429	664	419	598
Volume Left	0	664	0	0
Volume Right	146	0	0	598
cSH	1700	1131	1700	1047
Volume to Capacity	0.25	0.59	0.25	0.57
Queue Length 95th (ft)	0	100	0	94
Control Delay (s)	0.0	12.6	0.0	12.9
Lane LOS		B		B
Approach Delay (s)	0.0	7.7		12.9
Approach LOS				B

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value

Appendix C

Pre-Assessment Consultation Comment and Response Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2011-TA-0265

MAY 2 7 2011

MAY 2 5 2011

Mr. Earl Matsukawa
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Subject: Technical Assistance for the Development of a Draft Environmental Assessment for the County of Kauai Department of Water, Lihue Baseyard Improvements, Kauai

Dear Mr. Matsukawa:

The U.S. Fish and Wildlife Service has reviewed the Project Summary in your pre-assessment for your Draft Environmental Assessment (EA) for the proposed County of Kauai Department of Water, Lihue Baseyard Improvements, Kauai. We received your letter requesting comments on April 25, 2011. The proposed project includes constructing a new administrative building and storage building on 2.3 acres of land (TMK 3-8-005:013) adjacent to the existing baseyard on Pua Loke Street in Lihue. We have reviewed the project information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program and the Hawaii GAP Program. The federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) and Hawaiian goose (*Branta sandvicensis*) have been seen in the vicinity of your proposed project. The federally threatened Newell's shearwater (*Puffinus auricularis newelli*) and the federally endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*), collectively referred to as seabirds, are known to fly over the project area on their way from the sea to mountain breeding areas. There is no federally designated critical habitat in the project vicinity. We recommend you address potential project impacts to the listed species discussed below, and include measures to minimize impacts to these resources in your Draft EA.

- Hawaiian hoary bats roost in both exotic and native woody vegetation and leave their young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the bat breeding season (May to August), there is a risk that young bats could inadvertently be harmed or killed. To avoid impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet tall should not be removed or trimmed during the bat-birthing and pup-rearing season (May 15 through August 15).

TAKE PRIDE IN AMERICA

- We recommend the site is surveyed to determine if Hawaiian geese utilize the area. If Hawaiian geese utilize the project site, we recommend you evaluate project impacts to the geese in your Draft EA.

- Outdoor lighting, such as nighttime construction and street lights, can adversely impact listed and migratory seabird species. Seabirds fly at night and are attracted to artificially-lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy-wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators and are often struck by vehicles along roadways. Any increase in the use of nighttime lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. Impacts to seabirds can be minimized by shielding outdoor lights associated with the project to the maximum extent possible, eliminating night-time construction, and providing all project staff with information about seabird fallout. All lights, should be shielded so the bulb can only be seen from below and use the lowest wattage bulbs possible. If existing power lines must be altered or replaced as a result of this proposed project, or if nighttime construction is proposed June through December, we suggest that you contact our office so that we may assist you in developing appropriate avoidance and minimization measures. The Draft EA should address all potential impacts to seabirds and outline measures to minimize these impacts.

If you have questions regarding this letter, please contact Dr. Jeff Zimpfer, Fish and Wildlife Biologist, Consultation and Habitat Conservation Planning Program (phone: 808-792-9431; email: jeff_zimpfer@fws.gov).

Sincerely,

for Loyal Mehrhoff
Field Supervisor

WILSON OKAMOTO CORPORATION
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1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone: 808-946-2277
FAX: 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Dr. Loyal Mehrhoff, Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, HI 96850

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Dr. Mehrhoff:

Thank you for your letter dated May 25, 2011 (2001-TA-0265) regarding the subject Draft EA pre-assessment consultation. We acknowledge your statement that the federally endangered Hawaiian hoary bat and the Hawaiian goose have been seen in the project vicinity and that the federally threatened Newell's shearwater and federally endangered Hawaiian petrel are known to fly over the project area. The forthcoming Draft EA will include a discussion on the above species and potential mitigation measures that could minimize the risk of harming these species. Specifically:

1. An avian and terrestrial mammalian survey was conducted for the project and included in the forthcoming Draft EA.

2. The avian and terrestrial mammalian survey determined that the project site consists of four kukui trees, any of which a Hawaiian hoary bat could potentially use as a day roost site, though given the lack of surrounding vegetation and the highly disturbed and urban nature of the site seem rather unlikely. Based on the survey's recommendations, the four trees will not be cleared between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

3. Based on the findings of the survey, no native avian species currently proposed for listing, or listed under either the Federal or the State endangered species statutes were detected on the site, including the Hawaiian goose, or Nene (*Branta sandvicensis*).

4. To reduce impacts to the Newell's shearwater and the Hawaiian petrel, all exterior lighting within the proposed project will be shielded and or directed downward to reduce the potential for interaction with exterior lights and man-made structures. No night time construction is anticipated.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

United States Department of the Interior
U.S. GEOLOGICAL SURVEY
Pacific Islands Water Science Center
677 Ala Moana Blvd., Suite 415
Honolulu, Hawaii 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

TAKE PRIDE IN AMERICA

May 6, 2011

RECEIVED
MAY 10 2011
WILSON OKAMOTO CORPORATION

Mr. Earl Matsukawa, Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation, Department of Water – Lihue Base-Yard Improvements, Tax Map Key: 3-8-005:013 and 2.30 acre portion of Parcel N-1, Lihue, Kauai, Hawaii

Thank you for forwarding the subject EA Pre-Assessment Consultation for review and comment by the staff of the U.S. Geological Survey Pacific Islands Water Science Center. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document.

We appreciate the opportunity to participate in the review process.

Sincerely,

Stephen S. Anthony
Center Director

WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS · CONSULTANTS
1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone 808-946-2277
FAX 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Mr. Stephen S. Anthony, Center Director
U.S. Department of the Interior
U.S. Geological Survey
Pacific Islands Water Science Center
677 Ala Moana Boulevard, Suite 415
Honolulu, HI 96813

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Anthony:

Thank you for your letter dated May 6, 2011 regarding the subject Draft EA pre-assessment consultation. We acknowledge that your department was unable to review this document due to prior commitments and lack of available staff.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

NEIL ABERCROMBIE
GOVERNOR
STATE OF HAWAII

ALBERT "ALAPAKI" NAHALE-A
CHAIRMAN
HAWAIIAN HOMES COMMISSION

ROBERT J. HALL
DEPUTY TO THE CHAIRMAN

STATE OF HAWAI'I
DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

June 2, 2011

JUN 07 2011

Mr. Earl Matsukawa
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Aloha Mr. Matsukawa:

Subject: ENVIRONMENTAL ASSESSMENT (EA) PRE-ASSESSMENT CONSULTATION, DEPARTMENT OF WATER - LIHUE BASEYARD IMPROVEMENTS, TAX MAP KEY NOS. 3-8-005:013 AND 2.30 ACRE PORTION OF PARCEL N-1, LIHUE, KAUAI, HAWAII

Mahalo for the opportunity to review the subject document. The department has no comment to offer.

If you have any questions, please contact our Planning Office at 620-9481.

Me ke aloha,

Albert "Alapaki" Nahale-a
Chairman
Department of Hawaiian Home Lands

WILSON OKAMOTO CORPORATION
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8087-01
August 31, 2011

Mr. Alapaki Nahale-a, Chairman
State of Hawaii
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Nahale-a:

Thank you for your letter dated June 2, 2011 indicating that you have no comments to offer regarding the subject Draft EA pre-assessment consultation.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to
File:

11-298A CAB

May 13, 2011

Mr. Earl Matsukawa, AICP
Project Manager
Wilson Okamoto Corporation
Artesian Plaza, Suite 400
1907 South Beretania Street
Honolulu, Hawaii 96826

MAY 20 2011
WILSON OKAMOTO CORPORATION

Dear Mr. Matsukawa:

SUBJECT: County of Kauai Department of Water - Lihue Baseyard Improvements
Lihue, Kauai
Draft Environmental Assessment Pre-Assessment Consultation

The project should address the potential dust and odor nuisance concerns. Activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential dust and odor nuisance problems.

We encourage the contractor to implement a dust control plan, which does not require approval by the Department of Health, to comply with the fugitive dust regulations.

Dust control measures include, but are not limited to, the following:

a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Providing an adequate water source at the site prior to start-up of construction activities;
c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimizing dust from shoulders and access roads;
e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Controlling dust from debris being hauled away from the project site. Also, controlling dust from daily operations of material being processed, stockpiled, and hauled to and from the facility.

If you have any questions, please contact Mr. Barry Ching of the Clean Air Branch at 586-4200.

Sincerely,

WILFRED K. NAGAMINE
Manager, Clean Air Branch

BC:rg

WILSON OKAMOTO CORPORATION
CIVIL ENGINEERS • LAND PLANNERS • CONSULTANTS

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Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
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FAX 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Mr. Wilfred K. Nagamine, Manager
State of Hawaii
Department of Health
Clean Air Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Nagamine:

Thank you for your letter dated May 13, 2011 (11-298A CAB) regarding the subject Draft EA pre-assessment consultation.

The construction of the proposed project will be in compliance with the Hawaii Administrative Rules, Chapter 11-60.1-33, "Fugitive Dust". The best management practices (BMPs) listed in your letter will summarized and incorporated into the forthcoming Draft EA. The applicant will require the contractor to utilize appropriate BMPs to control fugitive dust.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD – 4 3 8 005 013 – ID664
EA DOW Lihue Baseyard Imprvmnts

May 10, 2011

MAY 12 2011
WILSON OKAMOTO CORPORATION

Mr. Earl Matsukawa
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street
Artesian Plaza Suite 400
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
Department of Water – Lihue Baseyard Improvements
4398 Pua Loke Road, Lihue, Kauai, Hawaii 96766
TMK (4) 3-8-005: 013 2.30 acre portion of Parcel N-1

Thank you for allowing us the opportunity to review the above subject project which requests comments on the Environmental Assessment (EA) Pre-Assessment Consultation Department of Water - Lihue Baseyard Improvements. We have the following comments and information on the above subject property:

The subject project is located in the critical wastewater disposal area as determined by the Kauai Wastewater Advisory Committee. We also have two individual wastewater systems (IWS) on file for the subject property.

Our records indicate that the property may be located within 1000' radius of a public potable well. Domestic wastewater treatment and disposal have not been addressed in the document. Please be informed that any new proposed IWS for the subject property must be located outside of the 1000' radius of a public potable well. In addition, if any of the existing IWSs will be used for the new proposed building, revised wastewater calculations for the IWS(s) shall be submitted to the Wastewater Branch for our review and approval.

All wastewater plans shall conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the final detailed wastewater plans for conformance to applicable rules. Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch on Oahu at 586-4294 or fax to 586-4300.

Sincerely,

SINA PRUDER, P.E., ACTING CHIEF
Wastewater Branch

LM/cle

c: DOH's Environmental Planning Office (EPO 11-081)
DOH-WWB's Kauai Staff – Ms. Lori Velter

WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS • ECONOMISTS

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Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone: 808-946-2277
FAX: 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Ms. Sina Pruder, P.E., Acting Chief
State of Hawaii
Department of Health
Wastewater Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Ms. Pruder.:

Thank you for your letter dated May 10, 2011 (LUD -4 3 8 005 013 - ID664) regarding the subject Draft EA pre-assessment consultation. We offer the following responses in the order of your comments:

1. We acknowledge that the subject project is located in the critical wastewater disposal area as determined by the Kauai Wastewater Advisory Committee.

2. We confirm that there are two individual wastewater systems (IWS) on file for the subject project. The existing Administration Building and Operation Building are connected to an aerobic treatment system, which uses a seepage pit for effluent disposal, while the Micro Lab Building is connected to a septic tank with a leaching field. In addition, it appears that the project site is located within the 1,000-foot radius of two public potable wells according to the Commission on Water Resource Management GIS database. Based on this information, the DOW will pursue a new sewer connection to the existing Grove Farm sanitary sewer system in Hala Road, just beyond Haleko Road. This would serve the new facility and allow the two existing systems to be decommissioned.

3. All wastewater plans shall conform to applicable provisions of the Department of Health Administrative Rules, Chapter 11-62, "Wastewater Systems" and will be submitted to you for review.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

April 26, 2011

RECEIVED
MAY 11 2011
WILSON OKAMOTO CORPORATION

MEMORANDUM

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

AM10:56:51
MAY 2 '11
DLNR KDLO RCVD

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Environmental Assessment for Department of Water-Lihue Baseyard Improvements
LOCATION: Island of Kauai
APPLICANT: Wilson Okamoto Corporation on behalf of the County of Kauai, Department of Water

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 10, 2011.

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

Signed: _____
Date: 5/9/11

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

May 11, 2011

RECEIVED
MAY 12 2011
WILSON OKAMOTO CORPORATION

Wilson Okamoto Corporation
1907 South Beretania Street Suite 400
Honolulu, Hawaii 96826

Attention: Mr. Earl Matsukawa, Project Manager

Ladies and Gentlemen:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation for Department of Water – Lihue Baseyard Improvements

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 State Parks, 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 587-0414. Thank you.

Sincerely,

Charlene E. Unoki
for Russell Y. Tsuji
Administrator

54737

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

RECEIVED
STATE PARKS DIV
'11 APR 27 P1:46

April 26, 2011

DEPT OF LAND & NATURAL RESOURCES
2011 MAY -3 P 3:23

MEMORANDUM

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

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Environmental Assessment for Department of Water-Lihue Baseyard Improvements
LOCATION: Island of Kauai
APPLICANT: Wilson Okamoto Corporation on behalf of the County of Kauai, Department of Water

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 10, 2011.

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: 5/2/11

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

2011 MAY -4 A 11:02

RECEIVED
'11 APR 26 P1:03
ENGINEERING

April 26, 2011

MEMORANDUM

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

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Environmental Assessment for Department of Water-Lihue Baseyard Improvements
LOCATION: Island of Kauai
APPLICANT: Wilson Okamoto Corporation on behalf of the County of Kauai, Department of Water

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by May 10, 2011.

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: 5/3/11

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/CharleneUnoku
RE:CDUA-KA-3588:KuhioHWaySlopeSatbilization
Kauai:104

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. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include water demands and infrastructure required to meet project needs. Please note that projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

( ) 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, CHIEF ENGINEER

Date: 5/27/11

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
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

May 26, 2011

Wilson Okamoto Corporation
1907 South Beretania Street Suite 400
Honolulu, Hawaii 96826

MAY 27 2011

Attention: Mr. Earl Matsukawa, Project Manager

Ladies and Gentlemen:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation for Department of Water – Lihue Baseyard Improvements

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 Division of Forestry & Wildlife for their review and comment.

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 587-0414. Thank you.

Sincerely,

Charlene Unoki
Assistant Administrator

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
DEPUTY TO THE CHAIRPERSON

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

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

May 24, 2011

MEMORANDUM

TO: Charlene Unoki, Assistant Administrator
Land Division

FROM: Paul J. Conry, Administrator
Division of Forestry and Wildlife

SUBJECT: Pre-Assessment Consultation for Environmental Assessment for Department of Water – Lihue Baseyard Improvements

The Division of Forestry and Wildlife (DOFAW) received your memorandum dated April 26, 2011, relating to the subject project. DOFAW notes that the project will likely have a direct impact on our Kauai baseyard and associated operations. DOFAW requests that the Applicant consider the following issues during research and preparation of appropriate environmental review documents.

1. How will public and staff ingress and egress to the DOFAW baseyard be influenced both during construction and after the project is completed? How will traffic patterns be managed?
2. What measures will be implemented to manage waste products such as sewage or solid waste?
3. The Applicant is requested to consult directly with DOFAW during the environmental review process.

Thank you for the opportunity to comment on this item. Should you have any questions please contact Galen K. Kawakami, our Kauai Branch Manager at 274-3436.

c: DOFAW Kauai Branch
DOFAW Admin. Forestry

WILSON OKAMOTO CORPORATION
ENGINEERS | PLANNERS | CONSULTANTS

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Honolulu, Hawaii, 96826 USA
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FAX 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Mr. Russell Tsuji, Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Tsuji:

Thank you for your letters dated May 11 and May 26, 2011 regarding the subject Draft EA pre-assessment consultation. We offer the following responses to your comments:

1. We acknowledge that the Division of State Parks and the Land Division – Kauai District have no comments to offer at this time.

2. Engineering Division:
We appreciate your confirmation that the project site is located in the Flood Zone X.

3. Division of Forestry and Wildlife
The access to the existing DOW Administration Building, the DOFAW baseyard, and Department of Agriculture site will be kept open. During construction, utility trenching may cause temporary traffic impacts to the area. To mitigate such impacts, one lane on Hala Road will be kept open at all times with flagmen to direct traffic. Should utility trenching affect the access road to the DOFAW facility, DOW will consult with DOFAW well before the start of construction.

To manage sewage, the DOW is seeking to create a new sewer connection to the existing Grove Farm sanitary sewer system in Hala Road, just beyond Haleko Road. Solid waste disposal will continue to be provided by the County with disposal at the Kekaha landfill. In addition, the DOW participates in the County's recycling program.

The DOW will consult directly with DOFAW during the environmental review process.

Your letter, along with this response, will be reproduced in the forthcoming Draft EA. Thank you for your participation during the environmental review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
JAN S. GOUVEIA
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:

STP 8.0454

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

June 8, 2011

RECEIVED
JUN 22 2011
WILSON OKAMOTO CORPORATION

Mr. Earl Matsukawa, Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Lihue Baseyard Improvements
Pre-Assessment for Draft Environmental Assessment (DEA)

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

DOT understands the Kauai County, Department of Water (DOW), proposes to develop a new administration building and future storage building on a 2.30 acre site it plans to acquire and consolidate it with the existing 2.47 acre Lihue Baseyard. The main project access will be from Pua Loke Road.

DOT offers the following comments:

1. The DEA should discuss and evaluate the project at full build out and occupancy, and whether there would be any significant contribution to the cumulative traffic impacts on State highways facilities in the area.

2. A permit is required from DOT Highways, Kauai District Office, to transport oversized and overweight equipment/loads within the State highway facilities.

3. Any changes or updating of the conditions on the right-of-way of Kaumualii Highway bordering parcel N-1, including any ground (drainage, landscaping, etc.) impacts, should be discussed in the DEA and coordinated with the DOT Highways Division.

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) 831-7976.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

WILSON OKAMOTO CORPORATION
ENGINEERS / PLANNERS / CONSULTANTS

1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
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FAX: 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Dr. Glenn M. Okimoto, Ph.D., Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Dr. Okimoto:

Thank you for your letter dated June 8, 2011 (STP 8.0454) regarding the subject Draft EA pre-assessment consultation. We offer the following responses in the order of your comments:

1. A Traffic Impact Report (TIR) will be prepared and included in the forthcoming Draft EA. The TIR will identify and assess the traffic impacts resulting from the proposed improvements at full build out and occupancy, and address significant contributions to the cumulative traffic impacts on State highway facilities in the area.

2. We acknowledge that a permit from DOT Highways, Kauai District Office will be required for the transport oversized and overweight equipment/loads within the State highway facilities.

3. There is no site work or landscaping planned within the Kaumualii Highway right-of-way or that would affect the right-of-way.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD11/5705

May 10, 2011

RECEIVED
MAY 17 2011
WILSON OKAMOTO CORPORATION

Earl Matsukawa, Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawai'i 96826

Re: Pre-Draft Environmental Assessment Consultation
County of Kaua'i-Department of Water Supply Base Yard Improvements
Lihu'e, Island of Kaua'i

Aloha e Earl Matsukawa,

The Office of Hawaiian Affairs (OHA) is in receipt of your April 22, 2011 letter seeking comments ahead of a draft environmental assessment (DEA) to support the acquisition of a 2.3 acre parcel (parcel) in Lihu'e on the Island of Kaua'i which is proposed by the County of Kaua'i-Department of Water Supply (DWS). After it is acquired, the parcel will be consolidated with an adjacent 2.47 acre parcel owned and currently utilized by the DWS for base yard and administration purposes. Improvements, including the construction of a new administration building will then be developed on the consolidated parcel to support DWS functions and operations through 2020.

OHA has no substantive comments at this time. We look forward to reviewing the DEA and providing additional comments at that time. Please send one CD and one hardcopy of the DEA to OHA attn: Compliance Monitoring Program when it becomes available. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

C: OHA- Kaua'i COC

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8087-01
August 31, 2011

Mr. Clyde Namuo, Chief Executive Officer
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Namuo:

Thank you for your letter dated May 10, 2011 (HRD11/5705) indicating that you have no comments to offer regarding the subject Draft EA pre-assessment consultation. When the Draft EA is ready for distribution, we will send a CD and a hard copy of the Draft EA attention to your Compliance Monitoring Program.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

Bernard P. Carvalho, Jr.
Mayor

Gary K. Heu
Managing Director

Larry Dill, P.E.
County Engineer

Lyle Tabata
Deputy County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Lihu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

May 19, 2011

JUN 1 3 2011

Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawai'i 96826
Attention: Mr. Earl Matsukawa, Project Manager

SUBJECT: ENVIRONMENTAL ASSESSMENT PRE-ASSESSMENT CONSULTATION
DEPARTMENT OF WATER – LIHU'E BASEYARD IMPROVEMENTS
TMK: 3-8-005-013 PW 04.11.117

Gentlemen,

We reviewed the subject project involving the use of County funds and lands to develop a new administration building and future storage building, including parking, loading and staging areas. We understand that the project site is located on Parcel N-1 with an area of 2.47 acres. We offer the following comments:

1. Best Management Practices (BMP's) shall be incorporated to the maximum extent practicable to prevent damage by sedimentation, erosion, or dust from entering streams, watercourses, natural areas and the property of others. The permittee and the property owner shall be responsible to ensure BMP's are satisfactorily implemented at all times.

2. A drainage study needs to be prepared to analyze the existing hydrology and evaluate any increase in storm runoff as a result of the impervious roofs and parking lot. The development is required to maintain the existing drainage flow patterns and to keep peak storm flow rates to predevelopment levels by detaining the increased storm runoff volume.

3. Parking stall dimensions and travel aisle width should comply with the County of Kaua'i parking layout standards (See Standard Details for Public Works Construction dated Sept. 1986 Sheet T-12 and T-13).

4. ADA accessibility compliance should be provided as required under Hawai'i Revised Statues 103-50. HRS 103-50 states "all plans and specifications for the construction of public buildings, facilities and sites by the State or any County

shall be prepared so that the buildings and facilities are accessible to and usable by persons with disabilities."

5. Hala Road access with Kaumuali'i Highway has been closed-off by County Council Traffic Resolution No. 2010-55. A copy of the traffic resolution is enclosed for your information and use.

We wish to remain on your mailing list in receiving a copy of the Draft EA. Should you have questions, contact Wallace Kudo of my staff at (808) 241-4891.

Very truly yours,

LARRY DILL, P.E.
County Engineer

WK
Attachment
cc: Design and Permitting w/attachments
Construction Inspection w/attachments
Ken Teshima w/attachments

COUNTY COUNCIL

COUNTY OF KAUA'I

Resolution No. 2010-55

RESOLUTION AUTHORIZING CLOSURE OF HALA ROAD
AT ITS INTERSECTION WITH KAUMUALI'I HIGHWAY, LIHU'E DISTRICT

WHEREAS, pursuant to a letter dated July 9, 1969 from the State Department of Transportation, Highways Division, a portion of roadway and road remnant was transferred from the State of Hawai'i to the County of Kaua'i by quit claim deed; and

WHEREAS, the purpose of this closure is to accommodate the State Highways Division's proposed Kaumuali'i Highway Widening project in the vicinity of Anonui Street to the vicinity of Lihu'e Mill Bridge, Federal Aid Project No. NH 050-1(31), from two to four traffic lanes as shown on Exhibit "A," which is attached hereto and incorporated herein by reference; and

WHEREAS, Section 264-1, Hawai'i Revised Statutes, requires County public highways to be closed by a Resolution of the County Council; now therefore,

BE IT RESOLVED BY THE COUNCIL OF THE COUNTY OF KAUA'I, STATE OF HAWAII, that it approves the closure of Hala Road at its intersection with Kaumuali'i Highway pursuant to the procedures established in Chapter 264, Hawai'i Revised Statutes.

BE IT FURTHER RESOLVED that copies of this Resolution be transmitted to the County Engineer, County Attorney, and the State Department of Transportation, Highways Division, Kaua'i District.

BE IT FURTHER RESOLVED, that this Resolution shall take effect upon its approval.

Introduced by:

TIM BYNUM
(By Request)

	Aye	Nay
Chang	x	
Bynum	x	
Chock	x	
Furfaro	x	
Kawakami	x	
Kuhaulua	x	
Nakamura	x	
Total	7	0

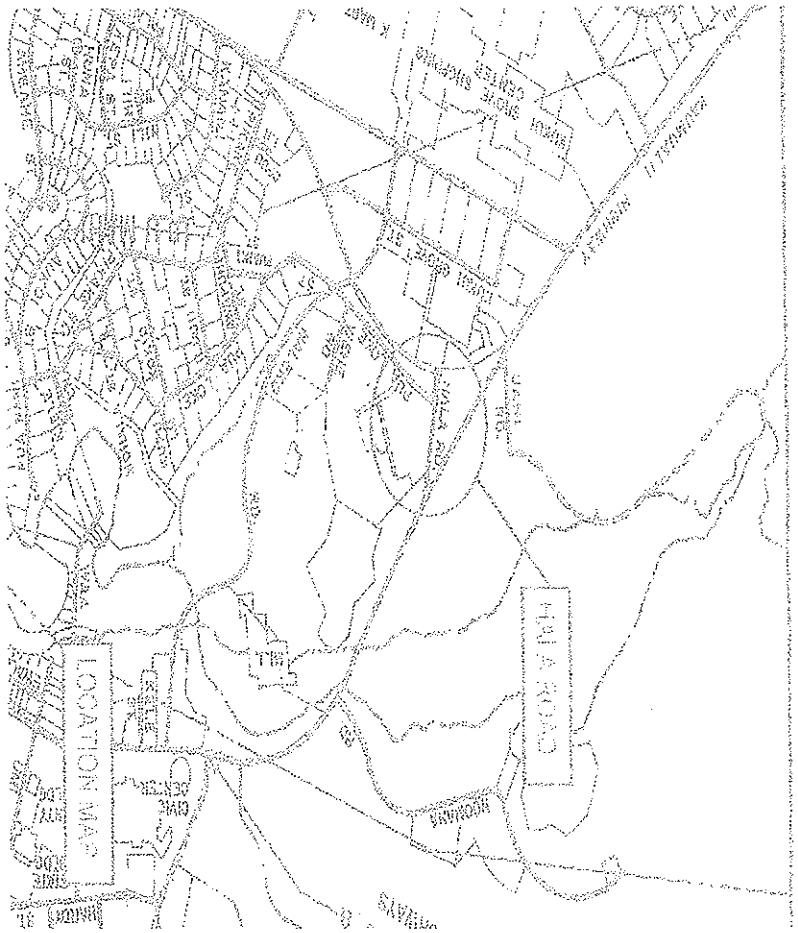
Certificate Of Adoption

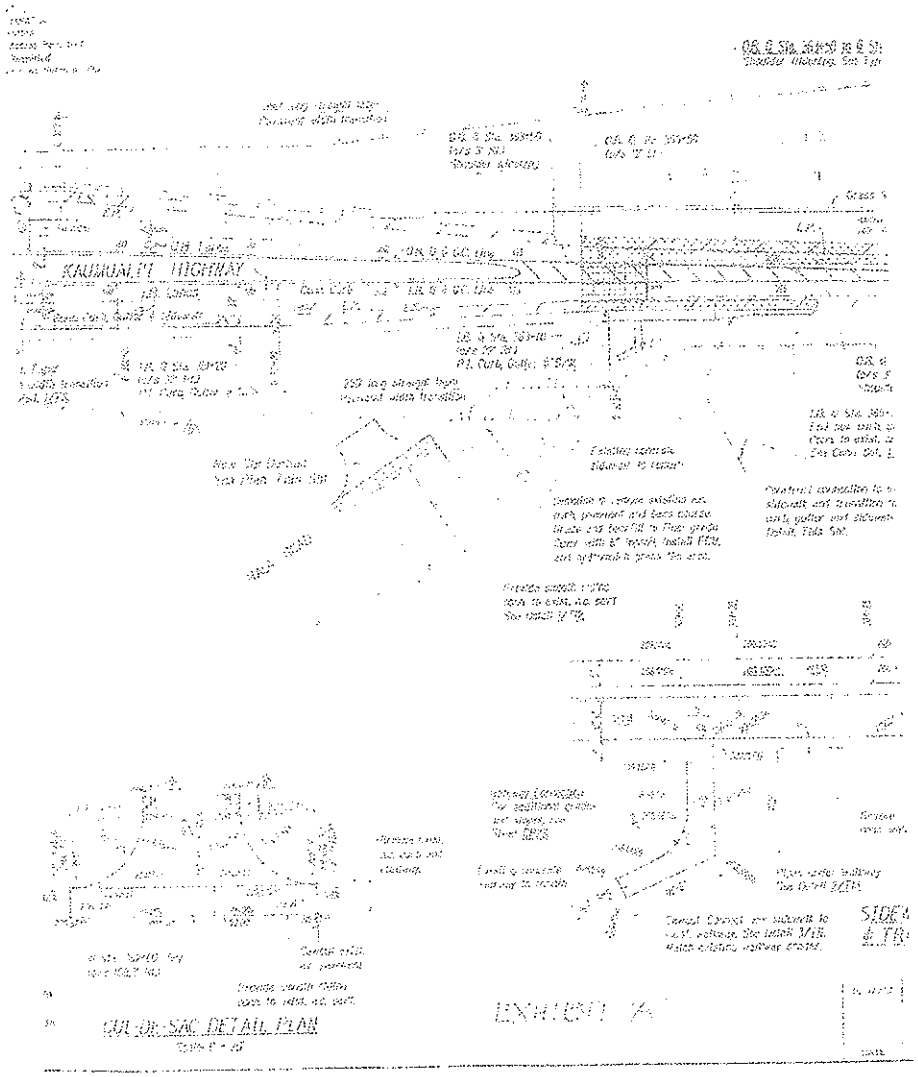
We hereby certify that Resolution No. 2010-55 was adopted by the Council of the County of Kaua'i, State of Hawai'i, Lihu'e, Kaua'i, Hawai'i, on November 10, 2010

County Clerk

Chairman & Presiding Officer

Date 11/10/2010





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8087-01
August 31, 2011

Mr. Larry Dill, P.E., County Engineer
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, HI 96766

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Dill:

Thank you for your letter dated May 19, 2011 regarding the subject Draft EA pre-assessment consultation. We offer the following responses to your comments:

1. As appropriate, best management practices (BMPs) to prevent damage by sedimentation, erosion, or from dust entering streams, watercourses, natural areas, and the property of others, will be required in conjunction with obtaining a National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) for Construction Stormwater. This requirement will be stated in the forthcoming Draft EA.

2. A drainage study will be conducted in conjunction with civil enginerring design of the proposed project. The study will analyze the existing hydrology and evaluate any increase in storm runoff as a result of the impervious roofs and parking lot. The development shall maintain the existing drainage flow patterns and to keep peak storm flow rates to predevelopment levels by detaining the increased storm runoff volume.

3. Parking stall dimensions and travel aisle width will comply with the County of Kauai parking layout standards.

4. The proposed project will comply with ADA accessibility requirements pursuant to Hawaii Revised Statutes, Chapter 103-50.

5. We acknowledge that the Hala Road access with Kaumualii Highway has been closed-off by County Council Traffic Resolution No. 2010-55.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. When the Draft EA is ready for distribution, we will send your office a copy of the Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai, Department of Water
Charles Chan, Architects Hawaii Ltd.

Bernard P. Carvalho, Jr.
Mayor

Robert F. Westerman
Fire Chief

John T. Blalock
Deputy Fire Chief

COUNTY OF KAUAI
Fire Department
Hale Pumehana Building
3083 Akahi St., Suite 101
Lihu'e, Kaua'i, Hawaii 96766

May 6, 2011

Wilson Okamoto Corporation
1907 South Beretania St., Suite 400
Honolulu, HI 96826
Attn: Mr. Earl Matsukawa, Project Manager

MAY 11 2011
WILSON OKAMOTO CORPORATION

Dear Mr. Matsukawa:

The EA pre-assessment has been reviewed for the County of Kauai Department of Water Lihue Baseyard Improvements. The Kauai Fire Department will require that this project comply with the most current Kauai County Fire Code at time of plans submittal.

Should you have any questions, please call 241-4982.

Sincerely,

Daryl Date
Prevention Captain

Approved:

Robert F. Westerman
Fire Chief

AN EQUAL OPPORTUNITY EMPLOYER

WILSON OKAMOTO CORPORATION
ENGINEERS | PLANNERS | CONSULTANTS

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8087-01
August 31, 2011

Mr. Robert Westerman, Fire Chief
County of Kauai
Fire Department
4444 Rice Street, Suite 295
Lihue, HI 96766

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Chief Westerman:

Thank you for your letter dated May 6, 2011 regarding the subject Draft EA pre-assessment consultation. The proposed project will be designed to comply with the Kauai County Fire Code applicable when the plans are submitted.

Your letter, along with this response, will be reproduced and included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

THE GAS COMPANY

PO Box 3000
Honolulu, Hawaii 96802-3000
www.hawaiigasco.com

RECEIVED
MAY 24 2011
WILSON OKAMOTO CORPORATION

May 19, 2011

Mr. Earl Matsukawa
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Matsukawa:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
Department of Water – Lihue Baseyard Improvements
TMK: 3-8-005:013 and 2.30 acre portion of Parcel N-1
Lihue, Kauai, Hawaii

Per your letter on May 3, 2011, The Gas Company, LLC has no objections to the proposed Environmental Assessment. It has been determined that the area is currently clear of utility gas facilities.

Thank you for the opportunity to comment on the Environmental Assessment. Should there be any questions, or if additional information is desired, please call Chris Hall at 594-5553.

Sincerely,

The Gas Company, LLC

Charles E. Calvet, P.E.
Manager, Engineering

CEC:krs
11-152

WILSON OKAMOTO CORPORATION

1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone: 808-946-2277
FAX: 808-946-2253
www.wilsonokamoto.com

8087-01
August 31, 2011

Mr. Charles E. Calvet, P.E., Manager, Engineering
The Gas Company, LLC
P.O. Box 3000
Honolulu, HI 96802-3000

Subject: Pre-Assessment Consultation
Draft Environmental Assessment (EA) for
Department of Water - Lihue Baseyard Improvements
Tax Map Key: 3-8-005:013 and Parcel N-1
District of Lihue, Island of Kauai, Hawaii

Dear Mr. Calvet:

Thank you for your letter dated May 19, 2011 indicating that you have no objections to the subject Draft EA pre-assessment consultation. We appreciate your determination that the project area is clear of utility gas facilities.

Your letter, along with this response, will be reproduced and included in the forthcoming Final EA. We appreciate your participation in the Draft EA review process.

Sincerely,

Earl Matsukawa, AICP
Project Manager

cc: Dustin Moises, County of Kauai Department of Water
Charles Chan, Architects Hawaii Ltd.

WILSON OKAMOTO
C O R P O R A T I O N

ENGINEERS | PLANNERS | CONSULTANTS

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