Kailua High School Additional Access Project

Draft

Environmental Assessment

Prepared for

The Department of Accounting and General Services (DAGS)

Prepared by

Parsons Brinckerhoff Quade & Douglas, Inc.

January 2007

DRAFT

ENVIRONMENTAL ASSESSMENT

FOR THE

KAILUA HIGH SCHOOL ADDITIONAL ACCESS PROJECT

Kailua, Oahu, Hawaii

Tax Map Keys: 42003004, 42003008, 42003025, 42003026

Proposing Agency: The Department of Accounting and General Services (DAGS)

Approving Agency: The Department of Accounting and General Services (DAGS)

Anticipated Detemination: Finding of No Significant Impact (FONSI)

Consulted Parties: See section 5.0

Prepared by: Parsons Brinckerhoff Quade & Douglas, Inc.

January 2007

Table of Contents

Section **Page**

1.0 INTRODUCTION AND SUMMARY

1.1 Project Background 1-1
1.1.1 Project History 1-1
1.1.2 Pohakupu Community Concerns 1-4
1.1.3 Proposed Solutions 1-4
1.2 Project Description 1-4
1.3 Purpose and Need 1-8
1.4 Alternatives Considered 1-8
1.4.1 Alternative 1 New Road from Kalanianaole Hwy - No restrictions 1-8
1.4.2 Alternative 2: New Road from Kalanianaole Hwy - Ulumanu Drive Restrictions 1-10
1.4.3 Alternative 3: New Akiohala Parking Lot 1-12
1.4.4 Alternative 4: Ulumanu Drive Sidewalk Improvements 1-12
1.4.5 Alternative 5: Ulupii Street Sidewalk Improvements 1-13
1.4.6 Alternative 6: Makai "Old Kukanono" Access Road 1-13
1.4.7 Alternative 7: No Build 1-14
1.5 Environmental Impacts and Mitigations 1-15
1.6 Unresolved Issues 1-40
1.6.1 Alternatives 1 and 2 Construction of New Roadway 1-40
1.6.2 Alternative 3 New Akiohala Parking Lot 1-40
1.6.3 Alternative 4 Ulumanu Drive Sidewalk Improvements 1-40
1.6.4 Alternative 5 Ulupii Street Sidewalk Improvements 1-40
1.6.5 Alternative 6 Makai "Old Kukanono" Access Road 1-40
1.6.6 Alternative 7 No Build 1-41
1.7 Anticipated Determination 1-41
1.8 Project Schedule 1-41
1.9 Construction Funding 1-41

Table of Contents (cont'd)

Section **Page**

2.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

2.1 Physical Environment 2-1
- 2.1.1 Geology 2-1
- 2.1.2 Soils 2-2
- 2.1.3 Topography 2-4
- 2.1.4 Water Resources 2-5
- 2.1.5 Flora 2-11
- 2.1.6 Fauna 2-12
- 2.1.7 Historical and Archaeological Resources 2-13
- 2.1.8 Cultural Resources 2-17
- 2.1.9 Visual Resources 2-19
- 2.1.10 Noise and Vibration 2-26
- 2.1.12 Air Quality 2-46
- 2.1.13 Hazardous Waste/Materials 2-47

2.2 Socio-economics and Community 2-49
- 2.2.1 Population and Demographics 2-49
- 2.2.2 Economics 2-50
- 2.2.3 Neighborhood Character 2-51
- 2.2.4 Community Relations 2-54
- 2.2.5 Public Services and Facilities 2-56
- 2.2.6 Automobile Transportation 2-61
- 2.2.7 Land Use Consistency 2-74

Table of Contents (cont'd)

Section **Page**

3.0 ANTICIPATED DETERMINATION

3.1 Primary and Secondary Consequences 3-1
3.2 Cumulative Impacts....3-1
3.3 Unresolved Issues....3-1
3.4 Anticipated Determination Criteria 3-2
3.5 Anticipated FONSI.... 3-6

4.0 PERMITS AND APPROVALS

5.0 SCOPING

5.1 Agency Coordination....5-1
5.1.1 Department of the Interior, Fish and Wildlife Service 5-1
5.1.2 U.S. Army Corps of Engineers, Regulatory Branch....5.1
5.1.3 Honolulu Board of Water Supply 5.1
5.1.4 State Department of Education 5-2
5.1.5 DLNR Division of State Parks 5-3
5.1.6 Women's Community Correctional Facility (WCCC)....5-3
5.1.7 Department of Transportation....5-3
5.1.8 Department of Planning and Permitting (DPP) 5-4
5.1.9 City and County of Honolulu Land Division 5-4
5.1.10 City Departments of Facility Maintenance and Transportation Services and Design and Construction....5-4
5.2 Stakeholder Coordination....5-5
5.2.1 Community Meetings....5-5
5.2.2 Task Force Meetings 5-6
5.2.3 Stakeholder Meeting: September 29, 2005....5-12
5.2.4 Historic Preservation Consultation: June 15, 2006....5-17
5.3 Public Review and Comment 5-18
5.3.1 Community and Cultural Groups 5-18
5.3.2 Pohakupu Community 5-18

Table of Contents (cont'd)

6.0 LIST OF PREPARERS

6.1 Proposing Agency 6-1
6.2 Consultant Team 6-1
6.3 Sub-consultant Teams 6-1

7.0 DISTRIBUTION LIST 7-1
7.1 Federal Government 7-1
7.2 State Government 7-2
7.3 City and County Government 7-3
7.4 Organizations and Business 7-4
7.5 Individuals 7-5
7.6 Cultural Informants 7-5

8.0 REFERENCES 8-1

9.0 LIST OF ACRONYMS 9-1

APPENDICES

A Archaeological Survey
B. Cultural Resource Assessment
C. Visual Impact Assessment
D. Phase 1 Environmental Site Assessment
E. Traffic Study
F. Responses to Pre-Consultation Scoping Letter

LIST OF TABLES

Table **Page**

2-1 Construction Equipment Noise Levels 2-29
2-2 Estimated Noise Level Reductions Due to Distance 2-41
2-3 Typical Sound Levels Encountered in Common Activities 2-43
2-4 Land Use Day-Night Average Sound Level 2-44
2-5 Transportation Summary Evaluation Matrix 2-67
2-6 Intersection Sight-Distance Evaluation Northbound Kalanianaole Highway Left-turn Out of Proposed Access Road 2-72
2-7 Intersection Sight Distance Evaluation Southbound Kalanianaole Highway Left-turn Out of Proposed Access Road 2-72
2-8 Peak Hour Intersection Level of Service Proposed Access Road Location Alternatives 2-73

LIST OF FIGURES

Figure **Page**

1-1 Project Location Map 1-2
1-2 TMK Map 1-3
1-3 Project Alternatives Map 1-5
1-4 Typical Section 1-7
2-1 Floodzones 2-7
2-2 Aerial View Showing Archaeological APE for Alternatives 1-3 2-15
2-3 Potentially Affected Viewplane 2-21
2-4 Distant Viewpoint Analysis 2-22
2-5 Open Space Map 2-23
2-6 Viewplane Analysis 2-25

List of Figures (cont'd)

Figure		Page
2-7	Climatic Influences on Sound	2-27
2-8	Construction Equipment Noise Ranges	2-30
2-9	Vibration Effects of Excavation Blasting	2-35
2-10	Public Facilities Map	2-57
2-11	Access Road Intersection Location Alternatives	2-70
2-12	State Land Use District Boundaries	2-75
2-13	Zoning: City and County of Honolulu	2-87
2-14	SMA Map	2-89

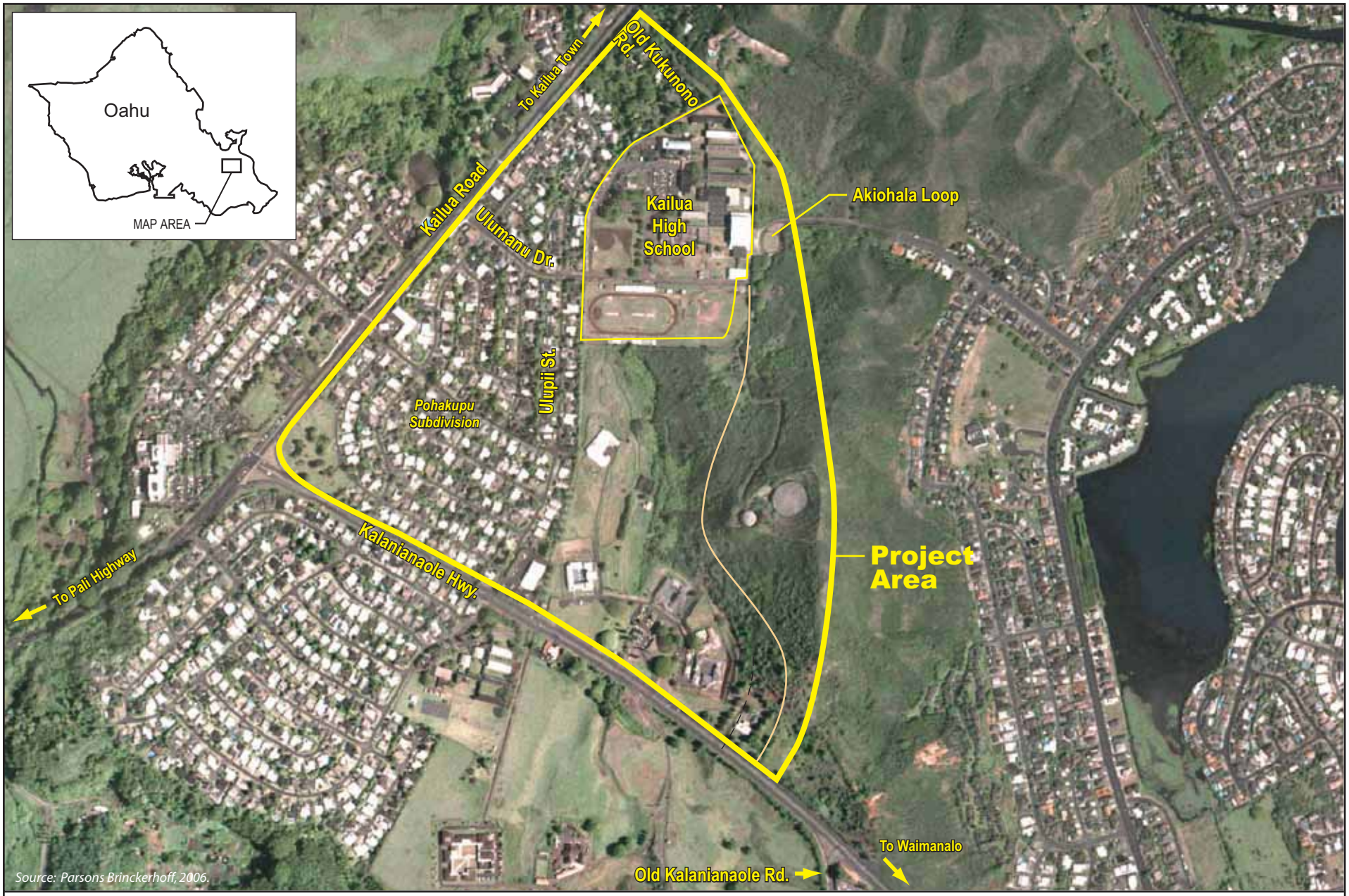
CHAPTER 1.0
INTRODUCTION AND SUMMARY

1.1 PROJECT BACKGROUND

1.1.1 Project History

The Pohakupu neighborhood of Kailua has been trying to obtain an additional road to Kailua High School (KHS) for approximately 25 years to address traffic-related quality of life issues in the community (see Figure 1-1). Serious accidents and injury have occurred due to pedestrian-automobile conflicts that are a result of the Pohakupu subdivision's narrow roads and their lack of sidewalks. An intermediate school was originally planned for the KHS site, but in 1954--a few years prior to Pohakupu's development in 1959--Kailua High School settled-in instead, and with it, student populations of as many as 3000 by the early 1970s, forcing a modular schedule of varying days and times for student attendance.

Although the opening of Kalaheo High School in the mid-1970s has caused KHS student enrollment to plummet to approximately one-third (1000) of its previous maximum (3000), Pohakupu's neighborhood streets continue to be used inappropriately due to excessive volume generated by KHS's traffic. Unlike other places (e.g. California), Hawaii does not have standards by which to reference and correct such misuse, but the absence of standards does not negate the issue of excessive travel on streets designed for neighborhood use. Additionally, high schools generally have sufficient traffic to justify an arterial access for improved safety and traffic flow. No direct access (dedicated driveway) presently exists from arterials Kailua Road or Kalanianaole Highway to Kailua High School. The proposed Alternatives 1-6 (see Figure 1-2) are consistent with the City and County of Honolulu Land Use Ordinance and Development Plan for the Primary Urban Center. Most Oahu high schools are connected directly to an arterial roadway without having to first pass through a residential community; such is not the case with the Pohakupu subdivision and Kailua High School (KHS), where the residential community is currently a designated access.



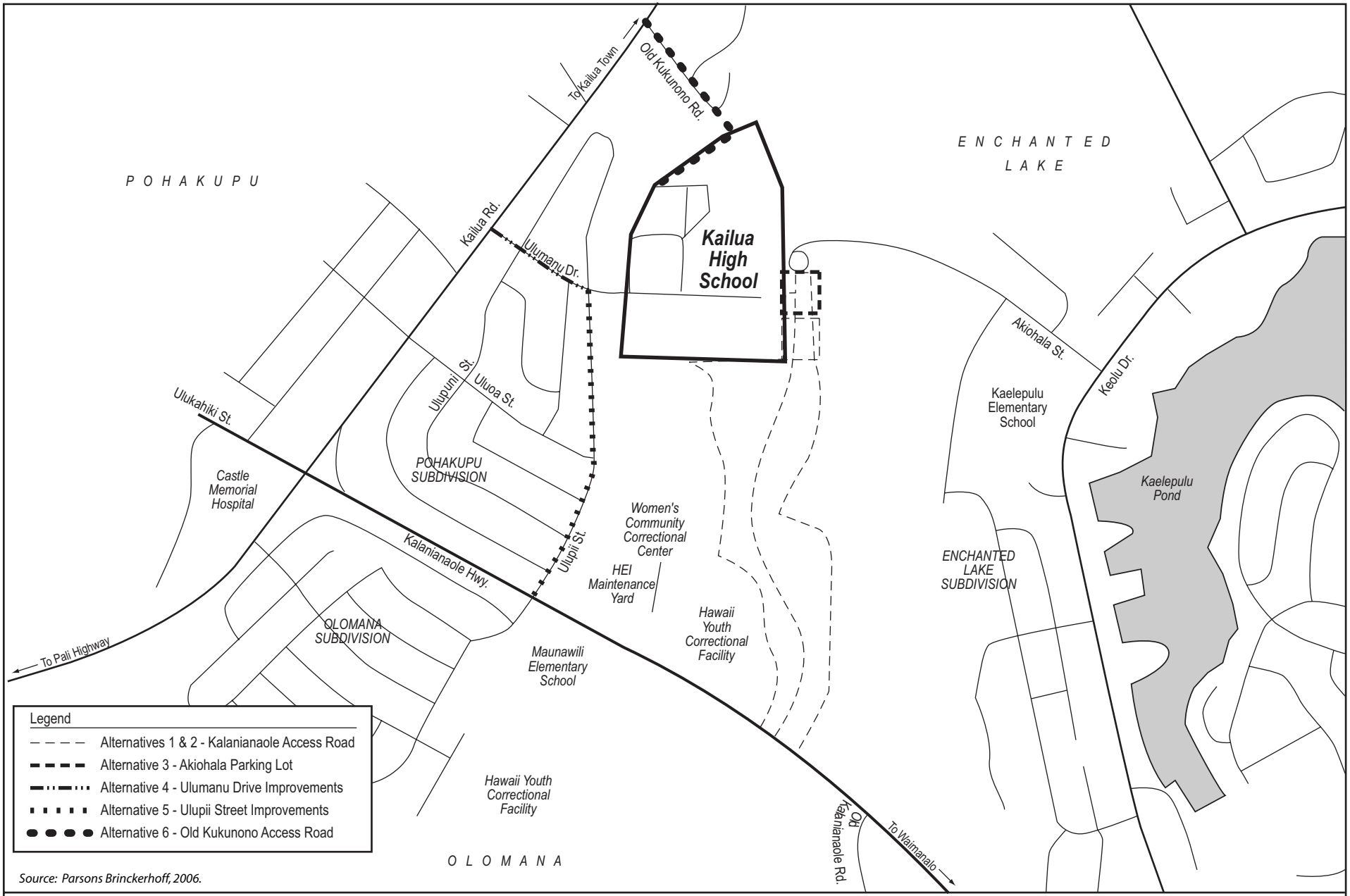
N

SCALE:

0 1/8 mi. 1/4 mi.

Project Location

Kailua High School Additional Access
Draft Environmental Assessment
Figure 1-1



Source: Parsons Brinckerhoff, 2006.

Project Alternatives

Kailua High School Additional Access
Draft Environmental Assessment
Figure 1-2

1.1.2 Pohakupu Community Concerns

The following concerns regarding KHS-related traffic issues were expressed by members of the Pohakupu neighborhood during project scoping and mostly relate to problems generated by high school traffic on narrow, un-curbed streets.

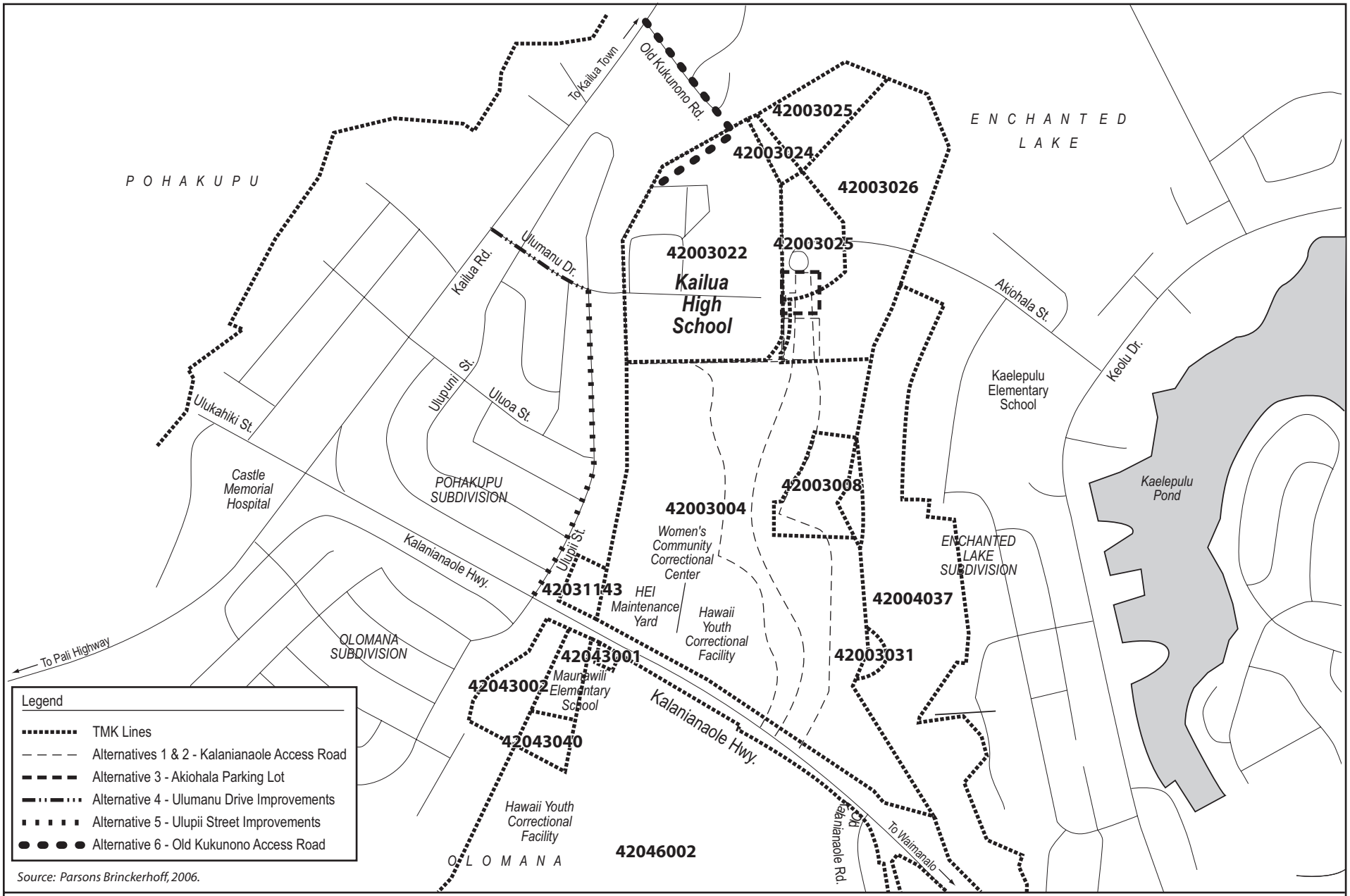
- Pedestrian safety for elementary school students.
- Safety of elderly pedestrians and parents strolling children.
- Inadequate KHS emergency shelter access.
- Occasional parking-related inconvenience (overflow into Pohakupu subdivision) and noise from KHS sporting events, graduation, and other events.
- KHS special event parking overflow limiting emergency vehicle access.
- KHS-bound heavy delivery trucks making noise.
- Speeding cars killing pets.
- Quality of life-related issues such as traffic noise, litter, and loud car stereos stemming from excessive KHS-bound traffic.

1.1.3 Proposed Solution

The Department of Accounting and General Services (DAGS)—the Environmental Assessment's (EA) Proposing Agency--is now analyzing the potential to provide an additional access route to KHS in order to help alleviate problems related to pedestrian-vehicle conflicts resulting from substandard access to KHS. Various project alternatives are being proposed in the vicinity of KHS, including a proposed new access road from Kalanianaole Highway—Alternative 1 (Figure 1-2) recommended by a traffic study performed for the project (Appendix E).

1.2 PROJECT DESCRIPTION

Six alternatives have been proposed within the project area in vicinity of KHS—(Figure 1-2), including the new access road recommended by the Traffic Study, extending from the base of *Keaniani* Ridge--also known as *Pu'u o Ehu* Ridge--with direct access from Kalanianaole Highway to KHS. The road proposed by Alternatives 1 and 2 would traverse TMKs 42003004 and 42003008, and a possible parking lot would likely traverse TMKs 42003025 and/or 42003026 (see Figure 1-3). The road will have two paved lanes, one in each direction, and each lane will be 12-feet wide, with a ten-foot



Source: Parsons Brinckerhoff, 2006.

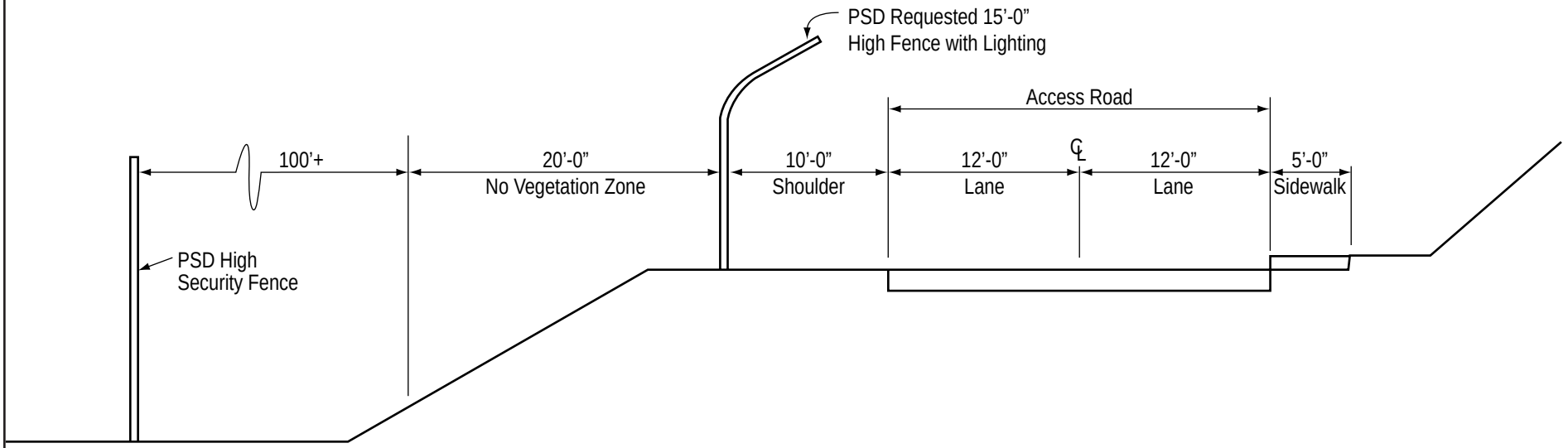
TMK Map

Kailua High School Additional Access
Draft Environmental Assessment
Figure 1-3

shoulder and a six-foot wide sidewalk (see Figure 1-4). An Americans with Disabilities Act Accessible Guidelines (ADAAG) compliant pedestrian route will be installed throughout the entire project on the east edge of the access road and will connect to KHS's on-campus ADAAG compliant path.

The road and parking lots proposed by Alternatives 1 and 2 will extend from Kalanianaole Highway through Department of Public Safety property adjacent to the Women's Community Correctional Center (WCCC) site, to the back of KHS and will connect to a parking lot (approximately the same size as present student parking—actual size will be determined during final design) at the makai terminus. The lot will not have vehicular access to any other part of campus. If Alternative 2 is chosen—a road with front gate entry restrictions for students--it is anticipated that after project construction, most traffic from Waimanalo and Kailua would access the school directly from Kalanianaole Highway instead of passing through the Pohakupu subdivision. If Alternative 1 is selected—no student restrictions upon front gate entry—mostly Waimanalo traffic will be rerouted to the new road. The intention of Alternatives 1 and 2 is to promote use of a new access over the use of the existing access located within the Pohakupu neighborhood. If the project is implemented, the contactor will need a staging area for ready-mix cement trucks, perhaps concrete pump trucks, and asphalt paving equipment for the new road surface. Earth moving and grading equipment will be used on the project and will be parked and maintained in the contractor's base yard, the location of which has yet to be determined. The staging grounds utilized for project construction will eventually be graded and planted with ground cover plants and restored to closely resemble its surroundings.

DAGS is preparing a Draft Environmental Assessment (EA) pursuant to the Hawaii Revised Statutes (HRS), Chapter 343 environmental review process.



KAILUA HIGH SCHOOL ACCESS ROAD
ADJACENT TO PSD HIGH SECURITY AREA

Source: Parsons Brinckerhoff, 2006.

Typical Section

Kailua High School Additional Access
Draft Environmental Assessment
Figure 1-4

1.3 PURPOSE AND NEED

The purpose of the project is to decrease traffic though the Pohakupu subdivision and increase safety for vehicular and pedestrian access to Kailua High School (KHS), while minimizing potentially negative affects on adjacent neighborhoods and communities due to altered traffic patterns and access routes. The project is needed to help reduce traffic through Pohakupu and to decrease KHS-related—pedestrian and vehicular conflicts.

The purpose and need for the Environmental Assessment (EA) are based on Chapter 343 Hawaii Revised Statutes (HRS) environmental review "triggers" for the project, which include the use of State of Hawaii funds and possibly lands, including the potential for use of State Conservation District lands if Alternatives 1 or 2 are implemented.

1.4 ALTERNATIVES CONSIDERED

Six "build" alternatives (Alternatives 1-6) and the "no build" alternative (Alternative 7) have been developed to meet the purpose and need for the project (Figure 1-2). They have been analyzed in this Draft Environmental Assessment (EA).

1.4.1 Alternative 1: Construction of New Roadway from Kalanianaole Highway to Kailua High School Property—No Restrictions on KHS Front Gate Access

Alternative 1 includes construction of a new roadway from Kalanianaole Highway to Kailua High School property (Figure 1-2). This alternative would divert High School traffic to the new roadway, thereby relieving the Pohakupu subdivision of KHS-related traffic. Another potentially positive benefit could occur as a result of reduction of overflow parking from Kailua High School special events, mentioned as a potential problem in the event of emergencies, due to obstructed emergency vehicle access. Overflow parking from KHS events has created physical barriers (i.e. cars blocking KHS access) to the Honolulu Fire Department (HFD) access in the past. The hope is that in addition to traffic relief in the Pohakupu neighborhood, an additional access road and an additional parking lot will help to alleviate the KHS special events overflow-parking

problem as well. The road would be built to modern safety standards, resulting in increased safety for motorists and pedestrians alike.

This alternative consists of two primary actions: the construction of the new access road and the construction of a new student parking lot at the makai terminus of the access road. The new road will provide direct access to the high school from Kalanianaole Highway through existing State Land. The connection point will have adequate sight distance at the Kalanianaole entrance, and the road will traverse Department of Public Safety (PSD) property from the Kalanianaole Highway to the rear of Kailua High School (KHS), to a location near the existing Board of Water Supply (BWS) access road. A parking lot (approximately the same size as present student parking—actual size to be determined in final design phase) would be constructed on the east side of the KHS connection point on PSD land is included in the alternative. The actual size would be determined during final design. No connection will be made from the present Akiohala drop to the new parking lot, no cross-campus traffic will be permitted, and the turn around from Akiohala will remain unimproved. Only students will be permitted to park in the new lot, with drops-offs and teacher/staff parking activities continuing through the front main entrance reached via Ulumanu Drive.

The following list describes major items of work anticipated.

- Construct a parking lot.
- Construct a two-lane access road.
- Install sidewalk on the east edge of the access road throughout the entire project, from the drop-off and parking lot to the campus, in accordance with Americans with Disabilities Act (ADA) requirements and Hawaii Revised Statutes (HRS 103-50).
- Design drainage systems in accordance with the latest versions of the HDOT Criteria for Highway Drainage, and the FHWA Hydraulic Engineers Circulars and Hydraulic Design Series.
- Implement permanent post-construction Best Management Practices (BMPs) to decrease the amount of stormwater runoff and improve the water quality of stormwater runoff discharging from the project site.
- Install signs and pavement markings.
- Install streetlights and other safety fixtures that comply with National Cooperative Highway Research Program (NCHRP-350) in accordance with the Roadside Design Guide.

- The proposed KHS access intersection on Kalanianaole Highway will be designed to comply with State of Hawaii Department of Transportation standards that are consistent with providing safe and efficient access on major arterial roadways.
- Incorporate the following security specifications required by Department of Public Safety because the road will traverse their parcel in close proximity to the WCCC (a correctional facility): 1) security fencing, roadway illumination, signage; 2) video surveillance; 3) Access Roadway Gate[s]; 4) controlled access granted to WCCC; and 6) a vegetation "no-pass" strip.

Unresolved jurisdictional issues include questions about who will own, maintain, and be liable for the KHS road/driveway. Because DAGS no longer maintains schools, it would be very unusual for DAGS to assume responsibilities for the KHS road/driveway, and other City and State agencies have voiced their resistance to assuming responsibilities for the road proposed by Alternatives 1 and 2. DAGS has agreed to assume responsibility for the road, but only through planning, design and construction phases.

1.4.2 Alternative 2: Construction of New Roadway from Kalanianaole Highway to Kailua High School Property with Ulumanu Drive Entrance Restrictions

Alternative 2 includes construction of a new roadway from Kalanianaole Highway to the Kailua High School property (Figure 1-2), but Alternative 2 is distinguished from Alternative 1 by its restrictions on the Ulumanu Drive KHS front entrance. With Ulumanu Drive entrance restrictions in place, Alternative 2 best meets the purpose and need in comparison to the other alternatives considered; however, KHS and Department of Education (DOE) opposition carry considerable weight against implementation of this alternative. Alternative 2 would primarily divert High School traffic to the new roadway, thereby relieving the adjacent Pohakupu neighborhood of the traffic. Another potential positive effect could occur as a result of reduction of overflow parking from Kailua High School special events, voiced as a community concern in the event of emergencies. Overflow parking has created physical barriers (i.e. cars blocking) to Honolulu Fire Department (HFD) access in the past, and the hope is that an additional access road and additional parking will help to alleviate this problem as well. The road would be built to modern safety standards and would increase safety for motorists and pedestrians alike.

This alternative consists of two primary actions: the construction of the new access road and the construction of a new student parking lot at the makai terminus of the access road. The new road will provide direct access to the high school from Kalanianaole Highway through existing State Land. The connection point will have adequate sight distance at Kalanianaole Highway, and the road will traverse Department of Public Safety (PSD) property to the rear of Kailua High School (KHS), near the existing Board of Water Supply (BWS) access road. A parking lot would be constructed (approximately the same size as present student parking—actual size to be determined in final design phase) on the east side of the KHS connection point on PSD land is included in this alternative.--the actual size would be determined during final design. No connection will be made from the present Akiohala drop to the new parking lot, no cross-campus traffic will be permitted, and the turn around from Akiohala will remain unimproved. KHS's main Ulumanu entrance will be restricted during peak hours to faculty, staff, and delivery vehicles. Options for restriction include automation (card-controlled gate) and use of security staff. Only students will be permitted to park in the new lot, with teacher/staff parking activities restricted to the Ulumanu Drive-KHS front main entrance. Alternative 2 emphasizes the reduction in KHS vehicles passing through the Pohakupu neighborhood. Restricting student parking and drop-offs to the new parking lot and away from the existing KHS front entrance parking is consistent with this goal. The DOE and KHS's strong opposition for the restricted access from the Ulumanu Drive front gate access remains an unresolved issue for Alternative 2. The following is a list of anticipated major items of work:

- Construct a parking lot.
- Construct a two-lane access road.
- Install sidewalk on the east edge of the access road throughout the entire project, from the drop-off and parking lot to the campus, in accordance with Americans with Disabilities Act (ADA) requirements and Hawaii Revised Statutes (HRS 103-50.
- Design drainage systems in accordance with the latest versions of the HDOT Criteria for Highway Drainage, and the FHWA Hydraulic Engineers Circulars and Hydraulic Design Series.
- Implement permanent post-construction Best Management Practices (BMPs) to decrease the amount of stormwater runoff and improve the water quality of stormwater runoff discharging from the project site.
- Install signs and pavement markings.

- Install streetlights and other safety fixtures that comply with National Cooperative Highway Research Program (NCHRP-350) in accordance with the Roadside Design Guide.
- The proposed KHS access intersection on Kalanianaole Highway will be designed to comply with State of Hawaii Department of Transportation standards that are consistent with providing safe and efficient access on major arterial roadways.
- Incorporate the following security specifications required by Department of Public Safety because the road will traverse their parcel in close proximity to the WCCC corrections facility: 1) security fencing, roadway illumination, signage; 2) video surveillance; 3) Access Roadway Gate[s]; 4) controlled access granted to WCCC; and 5) a vegetation "no-pass" strip.

Unresolved jurisdictional issues include questions about who will own, maintain, and be liable for the KHS road/driveway. Because DAGS no longer maintains schools, it would be very unusual for DAGS to assume responsibilities for the KHS road/driveway, and other City and State agencies have voiced their resistance to assuming responsibilities for the road proposed by Alternatives 1 and 2. DAGS has agreed to assume responsibility for the road, but only through planning, design and construction phases.

1.4.3 Alternative 3: New Akiohala Parking Lot

Alternative 3 proposes to connect the Akiohala drop-off to a parking lot on the east side of the campus near the present drop off area. The new lot will have approximately the same capacity as present student parking (Figure 1-2)--the actual size would be determined during final design. No cross-campus traffic will be allowed because it interferes with on campus foot traffic. The present and proposed parking lots will be separate, and students will have the choice to access either one. KHS issues of security labor and lighting are still unresolved.

1.4.4 Alternative 4: Ulumanu Drive Sidewalk Improvements

Alternative 4 proposes sidewalk improvements to Ulumanu Drive as the main entrance to KHS (Figure 1-2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.4.5 Alternative 5: Ulupii Street Sidewalk Improvements

Alternative 5 proposes sidewalk improvements to Ulupii Street to allow traffic to utilize Ulupii to get from Kalanianaole to the Ulumanu main entrance (Figure 1-2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.4.6 Alternative 6: Makai "Old Kukanono" Access Road

Alternative 6 proposes to connect Kailua Road to the campus student parking lot via a new (shorter) access road at the interface between the Pohakupu subdivision (makai end near Uluopiho Loop) and the private homes (sometimes referred to as "Old Kukanono"--see Figure 1-2, Alternative 6). This option would generally target those that are already using the Ulumanu Drive main KHS entrance. The new road would have to follow the usually dry drainage ditch and it would probably require condemning 1-3 homes. Although this new road connects many of the required project elements, questions related to reliability and safety of roadway use adjacent to a high-volume drainage ditch remain unresolved issues. Additionally, the potential for three residential properties to have Right of Way impacts is also a significant unresolved issue. Together, the two unresolved issues of constructing a road next to potentially high-volume storm water flow and displacement- of three residential properties have deemed Alternative 6 unworkable and unworthy of further consideration.

Provisions of the Hawaii State Plan (HRS Chapter 226) support the conclusion that Alternative 6 is unworkable. Because Alternative 6 would require condemnation of residential property, it is considered incompatible with the pursuit of compatible relationships among activities and facilities as outlined by 226-11(b) (8). In addition, 226-11(b) (4) requires that to achieve the land-based resources objectives, it is the policy to "Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage." Construction of a road next to a potentially high-volume drainage ditch poses flooding and safety risks for proposed road users, downhill residents and landowners, and biological resources in the marsh across Kailua Road.

1.4.7 Alternative 7: No Build

Alternative 7 proposes to maintain the status quo, with no proposed project improvements. Communities affected by KHS activities would remain unchanged, with present levels of traffic and pedestrian safety.

1.5 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATIONS

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Topography		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1 and 2: An approximately 36-foot wide access road would be cut into the hillside for an approximate one mile distance from Kalanianaole Highway to KHS, and a parking lot would be grubbed and graded into the hillside near the present Akiohala access. Alternative 3: A parking lot would be grubbed and graded into the hillside. Alternatives 4 and 5: The slopes of the residential lots could be affected by placement of the sidewalk. Alternative 6: Grading for the Makai Old Kukanono Road will impact the topography of a drainage ditch.	Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Hydrology, Water Quality, and Stormwater Runoff		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1 and 2: The unnamed springs, located behind the WCCC and observed during a 2005 field investigation, are likely to be impacted to some extent by the construction of a road. The quantity and quality of the water discharged from the springs may be affected to some extent by increased runoff and turbidity associated with altering the natural ecosystem during construction. Alternatives 1 and 2 could affect a "Tunnel/Ditch Line," that contains a cement "jacket" which once housed a pipeline that flowed from a pumping station on Kawainui Marsh, over Keaniani Ridge, and into Waimanalo Sugar Plantation. While there are some exposed areas of collapsed tunnel, most of the feature appears to be unexposed. Alternatives 1 and 2 will include construction of a new parking lot near the existing Akiohala Drop that will be accessed only from the proposed access road and accommodate approximately the same student parking capacity as the existing parking lot (actual dimensions to be determined in project design phase). Construction of the new road and parking lot is not anticipated to affect hydrologic resources.	Operational Impacts: Alternatives 1 and 2: Altered drainage patterns are likely to result from placement of a graded road along the hillside. Alternative 3: Alternative 3 will include a new parking lot in the vicinity of the existing Akiohala Drop that will be accessed from Akiohala Street and accommodate approximately the same student parking capacity as the existing parking lot (actual dimensions to be determined in project design phase), and it is not anticipated to affect hydrologic resources. Alternatives 4 and 5: Stormwater drainage in the residential neighborhoods along Ulumanu Drive and Ulupii Street are likely to be affected by altered drainage patterns, but stormwater drainage systems already in place are anticipated to have sufficient capacity to accommodate the increased stormwater runoff. Alternative 6: Stormwater drainage has the potential to adversely affect both the quantity and quality of water

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	Alternative 3: Alternative 3 will include a new parking lot in the vicinity of the existing Akiohala Drop that will be accessed from Akiohala Street and accommodate approximately the same student parking capacity as the existing parking lot (actual dimensions to be determined in project design phase), and it is not anticipated to affect hydrologic resources. Alternative 4-5: Construction of the two proposed sidewalks in Pohakupu will have a negligible effect on stormwater runoff and hydrologic resources in the area. Alternative 6: The proposed makai road through Old Kukanono has the potential to affect stormwater runoff. The hillside lands above it travels overland to Kailua Road into State Department of Transportation storm sewers that discharge into Kawainui Marsh, and the private road of this residential community has no drainage system; therefore, stormwater drainage for Alternative 6 has the potential to adversely affect both the quantity and quality of water potentially entering Kawainui Marsh or Oneawa Canal. Mitigation: Alternatives 1, 2, and 6: Water accumulated on the roadways	potentially entering Kawainui Marsh or Oneawa Canal. Mitigation: Alternatives 1, 2 and 6: Water accumulated on the roadways would be collected in drainage structures along the alignment, where necessary, and discharged periodically down slope of the roadway. Wherever possible, storm water will be allowed to sheet flow from the proposed new roadway in order to promote recharge of the ground water. Final design will incorporate appropriate design considerations that may add permanent devices to the drainage system to minimize erosion issues downstream of discharge points, promote groundwater recharge, and reduce the total discharge volumes.

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	would be collected in drainage structures along the alignment, where necessary, and discharged periodically down slope of the roadway. Wherever possible, storm water will be allowed to sheet flow from the proposed new roadway/parking facilities, in order to promote recharge of the ground water. Final design will incorporate appropriate design considerations that may add permanent devices to the drainage system to minimize erosion issues downstream of discharge points, promote groundwater recharge, and reduce the total discharge volumes. In the event the road will cross the "tunnel/ditch," any exposed conduit will be plugged to prevent the potential for stormwater transmission and potential migration of construction-related silt runoff to Kawainui Marsh.	

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Flora		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts Alternatives 1 and 2: The botanical surveys of similar surrounding areas and a site visit have revealed that there is no flora of biological interest at the proposed alternatives 1 and 2 sites, probably due to the fact past uses in the area have included extensive cultivation and grazing. Alternatives 3 and 6: The botanical surveys of similar surrounding areas and a site visit have revealed that there is no flora of biological interest at the proposed sites, probably due to the fact past uses in the area have included extensive cultivation and grazing. Alternatives 4, 5: These alternatives are proposed in residential neighborhoods; therefore, none of the proposed project alternatives is expected to have any significant adverse impact on the botanical resources at the sites.	Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Fauna		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered faunal species, or proposed or designated critical habitat occur on the proposed Alternatives 1-3 project sites. Construction Impacts: Alternatives 1, 2 and 3: The project is not expected to have adverse impacts upon fauna at the proposed project site. Unlike the wetlands at the base of Keaniani Ridge (also known as *Pu'u o Ehu* Ridge), the proposed project sites are not near any wetlands frequented by water birds, therefore no endemic or endangered water birds should be affected by the proposed project. Alternatives 4 and 5: No impacts to important fauna are anticipated from the sidewalks being placed in residential areas. Alternative 6: This alternative is not expected to have adverse impacts upon fauna at the site, but the proposed alternative road project site is within 0.25-mile of Kawainui Marsh	Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	wetlands, frequented by water birds, therefore the endemic or endangered water birds habitats could be affected by stormwater runoff and drainage from the proposed project.	
Historical, Cultural and Archaeological Resources		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1 and 2: An archaeological reconnaissance survey determined that no significant archaeological resources were located in the area; therefore, no affect is anticipated to any potentially significant historic resources located within the project area. Alternative 3: No affect is anticipated to any potentially significant historic resources located within the project area. Alternatives 4 and 5: Due to the existing urbanized residential nature of the settings, no affect is anticipated to any potentially significant historic resources located within the proposed alternative areas. Alternative 6: The portion of the Old Kukanono alternative that	Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	occurs in a drainage ditch that occasionally has high-volume flows that should make it devoid of archaeological resources. Mitigation: None required	
Visual Resources		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: None Mitigation: None required.	Operational Impacts: Alternatives 1 and 2: The development of the proposed access road is not anticipated to adversely affect scenic vistas or view planes identified in County or State plans or studies. However, the views from three correctional facilities will be affected: the State of Hawaii's Women's Community Correctional Center (WCCC), THE Hawaii Youth Correctional Facilities (HYCF), and Olomana School. The project will be clearly visible from many of the institutional buildings housing State corrections and education populations on Mt. Olomana. Due to decreased viewing distance, impacts will be greatest at the WCCC and HYCF facilities directly adjacent to the proposed project area. Distant views from the Pali Highway and Old Pali Road will not be impaired. Mt. Olomana's views from the summits will be affected for hikers. The new parking lot in the vicinity of the present Akiohala drop-off will have no visual impact

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		upon Keolu Hills, Enchanted Lake, WCCC, HYCF, Kailua Heights, and Mt. Olomana, due to the fact the parking lot location is shielded from these areas by the natural topography of the hillside. Alternative 3: As mentioned for the previous two roadway Alternatives 1 and 2, and Alternative 3's new parking lot in the vicinity of the present Akiohala drop-off will have no visual impact upon Keolu Hills, Enchanted Lake, Kailua Heights, WCCC, HYCF, and Mt. Olomana, due to the fact the parking lot location is shielded from these areas by the natural topography of the hillside. - Alternatives 4 and 5: New sidewalks within the residential subdivision will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes along Ulupii Street and Ulumanu Drive. Alternative 6: A new road within the residential neighborhood will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes of Old Kukanono Community.

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		Mitigation: Alternatives 1 and 2: Impacted views of the WCCC, the HYCF, and Olomana School institutional settings could be mitigated through landscaping the road. Cultural informants have suggested that Loulu palms would be appropriate due to their historic association with Kailua.
Noise and Vibration		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1 and 2: Noise will be generated by construction equipment vehicles involved in grubbing and grading the new roads. These construction phases may generate significant amounts of equipment noise; the actual levels are dependent upon the methods employed during each stage of construction by the contractor. Three noise-sensitive sites are within 0.25 to 0.5-mile of the road proposed for Alternatives 1 and 2: WCCC, HYCF, and Kailua High School. Construction noise will be audible for those receptors, although at reduced levels.	Operational Impacts: Alternatives 1 and 2: Decreased traffic noise levels are expected within the Pohakupu subdivision. Noise levels at the WCCC and HYCF are likely to increase as a result of implementation of Alternatives 1 or 2. Alternative 3: Slightly less noise will be generated in the Pohakupu community due to an anticipated decrease in vehicles who will now be parking in the new Akiohala lot. Alternative 4: Operational noise will remain unchanged. Alternative 5: Operational noise will be slightly higher due

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	Alternatives 3-6: Noise will also be generated by construction equipment vehicles involved in grubbing and grading the new road proposed in Alternative 6, the new parking lot for Alternative 3, and constructing the new pedestrian and drainage improvements for Alternatives 4 and 5. These construction phases may generate significant amounts of equipment noise; the actual levels are dependent upon the methods employed during each stage of construction by the contractor. Mitigation: Noise generated by construction activities would be a short-term environmental impact. Mitigation: Detailed construction noise mitigation measures are provided in Section 2.1.10.2.3.	to increased traffic on Ulupii as a result of removing turning restrictions as required by this alternative. Alternative 6: The proposed road crossing Old Kukanono Community is within 100 feet of noise sensitive receptors for most of its length, and those receptors would experience increased noise levels in proportion to the anticipated increase in traffic. Mitigation: None required.
Air Quality		
No Build: Alternative 7	Construction Impacts: Alternatives 1 and 2: Kailua High School, HYCF, WCCC and some adjacent residences could be affected the most by dust emissions during the construction period. Dust will be	Operational Impacts: Alternatives 1-6: No long-term air quality impacts are expected from operation of a road, a parking lot, or

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Construction Impacts: None Operational Impacts: None Mitigation: None required	heaviest during excavation, which is expected to take approximately four months, depending on the method of excavation. Trucks and other construction vehicles will also generate dust. The dust problem will decrease once excavation is completed and while the facilities are being constructed. Alternatives 3-6: Adjacent residences and Kailua High School will be affected the most by dust emissions during the construction period. Dust will be heaviest during excavation, which is expected to take approximately four months, depending on the method of excavation. Trucks and other construction vehicles will also generate dust. The dust problem will decrease once excavation is completed and while the facilities are being constructed. Mitigation: State air pollution control regulations require no visible fugitive dust emissions at the property line. To ensure compliance with these regulations, an effective dust control plan must be implemented. Dust control measures may include watering the work area, using windscreens, keeping adjacent roads clean, and covering open-bodied trucks. Other dust control measures may include limiting the area that can be disturbed at any given time and/or mulching or stabilizing inactive areas. Paving and landscaping early in the construction schedule will	sidewalks proposed for the six alternatives.

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	also reduce fugitive dust. Exhaust emissions may be mitigated by inspecting construction vehicles and moving construction equipment and workers during off-peak traffic hours. The contractor will be required to comply with the provisions of Chapter 60, "Air Pollution Control," of Title 11, Administrative Rules of the State Department of Health. In addition, the contractor will be required to implement measures to minimize air quality degradation. If dust levels exceed the Department of Health's air quality standards and affect HYCF, WCCC, or KHS classroom activities, additional mitigation measures may be appropriate.	
Hazardous Waste Materials		
No Build: Alternative 7 Construction Impacts: None	Construction Impacts: None Mitigation: None required	Operational Impacts Alternatives 1 and 2: The proposed roadways for Alternatives 1 and 2 are not likely to generate substantial amounts of non-point source pollution runoff from the use of their respective 208 and 394 vehicles trips per day;

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Operational Impacts: None Mitigation: None required		therefore, there is negligible potential for hazardous waste impacts. However, illegal dumping of hazardous materials could result from use of the proposed road. Alternatives 3-6: Alternatives 3-6 do not pose the potential to exacerbate the presence of hazardous waste materials in residential communities where few are likely to exist. Mitigation: None required
Population and Demographics		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None	Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: None Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Mitigation: None required		
Public Services and Facilities--Transportation		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: Pohakupu roads will continue to operate at present peak congestion levels and will maintain present levels of pedestrian safety. Mitigation: Implementation of Alternative 1 is recommended.	Construction Impacts: Alternatives 1 and 2: None Alternatives 3-6: Short-term and limited-intensity construction impacts to public facilities would result from the temporary inoperability of some facilities from construction related work interference. Mitigation: None required	Operational Impacts: Alternatives 1 and 2: Approximately 208 (Alternative 1) and 394 (Alternative 2) vehicles per hour are removed from the Pohakupu neighborhood during the AM peak period. Faculty, staff, and deliveries will continue to use the existing Ulumanu Drive access. The northbound left-turn at Ulumanu Drive/Kailua Road and westbound left-turn at Ulupii Street/Kalanianaole Highway experienced the least delays compared to the other alternatives. Reduced traffic volume during peak school access hours result in lower exposure for student pedestrians, thereby improving pedestrian safety and meeting both criteria of the project purpose. Included in this alternative is a new parking lot located at the mauka (south) end of KHS near the baseball field. This

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		new parking lot, coupled with the ability to access the greater school grounds, is projected to reduce the amount of overflow parking that currently affects the Pohakupu neighborhood during special events. Handicap accessibility for KHS students and the public (e.g. KHS visitors) will not be impacted due to project adherence to ADA and HRS 103-50 requirements. Alternative 3: This alternative is not projected to have a major impact on existing traffic patterns in surrounding neighborhoods, including traffic in the vicinity of Pohakupu and the Akiohala KHS access. Akiohala Street is currently a drop-off only access to KHS. Providing a parking lot accessible by Akiohala Street allows students that normally park at school to access KHS from Akiohala Street. Based on the travel patterns identified through the intercept surveys only 28 vehicles per hour (vph) would be likely to redirect from the Ulumanu access to the Akiohala access. Intersection operations are projected to be similar to Alternatives 4, 5, and 6 but lower than Alternatives 1 and 2. Because only 28 vph are projected to be redirected and no pedestrian improvements are proposed as part of this alternative, student pedestrian safety was deemed

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		unchanged from the existing condition due to the minor difference in vehicles redirected from the Ulumanu Drive access to the new Akiohala access parking lot. The Ulumanu access will continue to be the main access for this alternative, although the new parking lot is projected to reduce the potential for overflow parking in the Pohakupu neighborhood during KHS special events. Alternative 4: This alternative affects vehicular access patterns very little and would have a negligible effect on removing school traffic from the Pohakupu neighborhood. Intersection operations are projected to be similar to Alternatives 3, 5, and 6 but lower than Alternatives 1 and 2. The pedestrian facilities on Ulumanu Drive enhance pedestrian safety from the perspective of physically separating pedestrians and automobiles. Therefore, it is judged that overall pedestrian safety is improved compared to the existing condition. Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		events. Alternative 5: Because the added pedestrian facilities would provide an enhanced path for students and other pedestrians, the current prohibition on right-turns from Kalanianaole Highway to Ulupii Street during the morning peak period was removed in this alternative. Removing this prohibition is projected to add about 90 vehicles per hour onto Ulupii Street during the morning peak period. The overall number of KHS-related vehicles within Pohakupu would not change significantly from the existing condition. Intersection operations are projected to be similar to Alternatives 3, 4, and 6 but lower than Alternatives 1 and 2. Although the pedestrian facilities on Ulupii Street enhance pedestrian safety from the perspective of physically separating pedestrians and automobiles, the increased vehicular exposure caused by the removal of the existing right-turn prohibition during the morning peak period will decrease pedestrian safety to some extent. Therefore, it is judged that overall pedestrian safety is neutral when compared to the existing condition. Because this alternative does not change access or parking

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events. Alternative 6: Public facilities impacts for the "Old Kukanono Road were not analyzed because this alternative was deemed unworkable due to impacts relating to residential displacements and drainage and safety considerations relating to placement of the road in a dry stream bed. Mitigation: None required
Neighborhood Character		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1-6: Temporary changes in the physical character of the potentially affected neighborhoods will result because of decreased access to public facilities, and temporarily increased levels of air and noise pollution.	Operational Impacts: Alternatives 1 and 2: Because KHS is a designated shelter (hurricanes, homeland security, etc.), building an additional access road will provide improved safety and security for residents and students in emergency situations. An anticipated reduction in traffic volume in Pohakupu residential areas provides an added level of improved

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		safety for pedestrians. Alternatives 1 and 2 will additionally provide for a reduction of commuter-related noise in existing residential areas in Pohakupu and around the present Akiohala access, due to an expected reduction in traffic volume as a result of utilization of an alternative route. Improved travel efficiency for students coming from Waimanalo is also expected to result from implementation of Alternatives 1 or 2, a new road from Kalanianaole Highway. Alternative 3: This alternative will provide a much smaller reduction of commuter-related noise in existing residential areas than alternatives 1 and 5, due to less expected reduction in traffic volume as a result of an additional route stemming from construction of a new parking lot. Levels of safety in Pohakupu and in the Enchanted Lake neighborhood surrounding the present Akiohala KHS access are likely to be only marginally impacted by implementation of this alternative, as only slightly fewer cars are likely to use Pohakupu and Akiohala Street. Alternative 4: A new sidewalk will provide improved levels of safety on Ulumanu and Ulupii Streets, but they will do little to improve the existing traffic conditions.

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		Alternative 5: A new sidewalk will provide improved levels of safety on Ulupii Street, but they will do little to improve the existing traffic conditions. Removal of restrictive signage on Ulupii will increase traffic on that street. Alternative 6: Building an additional access road through Old Kukanono will provide improved safety and security for residents and students in emergency situations as KHS is a designated shelter (hurricanes, homeland security, etc.). An anticipated reduction in traffic volume in Pohakupu residential areas also adds another level of improved safety for pedestrians there. Alternative 6 will additionally provide for a reduction of commuter-related noise in existing residential areas due to an expected reduction in traffic volume as a result of utilization of an alternative route. Improved travel efficiency for students coming from Coconut Grove and Kailua Town is also expected to result from implementation of Alternative 6, an additional KHS road from Kailua Road. Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
Community Relations		
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts: Alternatives 1 and 2: Short-term construction-related impacts will occur and are likely to affect the Pohakupu community. Alternatives 3-6: Short-term construction-related impacts will occur and are likely to affect adjacent communities. Mitigation: Alternatives 1-6: The following measures are suggested to help mitigate community concerns by facilitating community relations and communications and keep area residents and workers informed about project activities: 1) maintain communication throughout the construction period with adjacent residents, neighborhood boards, and community associations; 2) publicize construction activities in the daily newspapers and in newsletters published by neighborhood boards and community associations; 3) maintain a procedure whereby questions, concerns, and complaints about the project will be handled expeditiously; and 4) Inform the public about the project's benefits.	Operational Impacts: Alternatives 1 and 2: Overall, the community of Pohakupu and adjacent communities support the implementation of the Alternatives 1 and 2 access road from Kalanianaole Highway, in order to reduce traffic, improve pedestrian safety, and provide an additional route to access Kailua High School. The WCCC has expressed concern about road maintenance and security issues involving the close proximity of the fence to the WCCC facility. In addition, the DOE and KHS have concerns surrounding possible alterations to campus access or security with the proposed access road; however, they favor the beneficial impact of the additional parking lot that comes with the road in Alternatives 1 and 2, or merely the parking lot proposed for Alternative 3. Alternatives 3-6: Overall, the community of Pohakupu and adjacent communities support the implementation of an additional access to KHS, in order to reduce traffic, improve pedestrian safety, and provide an alternate route to access Kailua High School. The DOE and KHS have concerns surrounding possible alterations to campus access or

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
		security. However, they favor the beneficial impact of the additional parking lot that is included as part of the proposed Alternatives 1 and 2 access road and Alternative 3 parking lot. Mitigation: Alternatives 1-6: The following measures are suggested to help mitigate community concerns by facilitating community relations and communications and keep area residents and workers informed about project activities: 1) maintain communication throughout the construction period with adjacent residents, neighborhood boards, and community associations; 2) publicize construction activities in the daily newspapers and in newsletters published by neighborhood boards and community associations; 3) maintain a procedure whereby questions, concerns, and complaints about the project will be handled expeditiously; and 4) inform the public about the project's benefits.
Cultural Resources		

No Build Alternative 7: Construction and Operational Impacts	**Build Alternatives 1-6**	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
No Build: Alternative 7 Construction Impacts: None Operational Impacts: None Mitigation: None required	Construction Impacts Alternatives 1 and 2: Both a *ki* (ti) planting and irrigation features are likely to be impacted by the construction of an additional access road. Alternative 3: No known resources exist near Alternative 3; therefore, no cultural affects are anticipated. Alternatives 4 and 5: No significant cultural impact from sidewalk construction is anticipated in this residential neighborhood. Alternative 6: No known resources exist near Alternative 6; therefore, no cultural affects are anticipated from construction of a road in this residential neighborhood Mitigation: Alternatives 1 and 2: If possible, the road alignment should attempt to avoid the *ki* (ti) and the irrigation features located on the hillside. While the *ki* (ti) planting appears to be surviving on ambient inputs without being cared for, because the irrigation features are of earthen construction materials	Operational Impacts: None Mitigation: None required

No Build Alternative 7: Construction and Operational Impacts	Build Alternatives 1-6	
	Short-Term Construction Impacts	**Long-Term Operational Impacts**
	only, the irrigation system will eventually erode to a dysfunctional state. Therefore, the under the No Build alternative, the irrigation system features will slowly disintegrate over the next 10-15 years; therefore mitigation is not recommended for the impermanent resource. Alternative 3-6: None required	

1.6 UNRESOLVED ISSUES

1.6.1 Alternatives 1 and 2 Construction of New Roadway from Kalanianaole Highway to Kailua High School Property

Unresolved issues include:

- PSD security requirements built into the design of the road are likely to raise project costs by at least $1 million over present project appropriations.
- DOE issues surrounding campus circulation, safety, and security.
- Ownership and maintenance issues—due to DOE and City's resistance to accepting ownership; therefore, the responsibility is likely to defer to the State, but questions surrounding *which* State department will maintain the road after construction remain unresolved
- There remain safety, security, and liability issues related to the road being in a remote area and adjacent to the correctional facilities of the HYCF and WCCC.
- Alternative 2 has an additional unresolved issue that Alternative 1 lacks: DOE representation and the KHS Principal adamantly oppose restrictions on the front gate access.

The aforementioned issues should be resolved prior to initiation of the project design phase.

1.6.2 Alternative 3 New Akiohala Parking Lot

KHS issues of security labor and lighting are still unresolved.

1.6.3 Alternative 4 Ulumanu Drive Sidewalk Improvements

The City owns the street; therefore, due to the fact the project is State initiated, there are jurisdictional issues that remain unresolved.

1.6.4 Alternative 5 Ulupii Street Sidewalk Improvements

The City owns the street; therefore, due to the fact the project is State initiated, there are jurisdictional issues that remain unresolved.

1.6.5 Alternative 6 Makai "Old Kukanono" Access Road: Although this new road connects many of the required project elements, questions related to reliability and safety of roadway use adjacent to a high-volume drainage ditch remain unresolved issues. Additionally, the potential for three residential properties to have

Right of Way impacts is also a significant unresolved issue. Together, the unresolved issues surrounding constructing a road in defacto/natural drainage roadside drainage ditch and displacements of three residential properties have deemed alternative 6 unworkable and unworthy of further consideration.

1.6.6 Alternative 7 No Build

Alternative 7 proposes to maintain the status quo, with no proposed project improvements; therefore, the only unresolved issues are those that establish the project purpose and need—traffic reduction and safety in Pohakupu, as well as improved access to the high school.

1.7 ANTICIPATED DETERMINATION

In accordance significance criteria cited in Hawaii Administrative Rules (HAR) Section 11-200-12, the environmental data collected to date was evaluated to determine the extent to which the proposed project might have a significant impact upon the environment. Based on that evaluation, no significant environmental impacts are anticipated to result from implementation of the proposed project; therefore, DAGS anticipates issuance of a Finding of No Significant Impact (FONSI).

1.8 PROJECT SCHEDULE

Design will be completed by January 2008, and construction is anticipated to be completed within the first few months of 2009.

1.9 CONSTRUCTION FUNDING

Based on the legislative events to date, it appears that construction funding should not be an issue for this project. The Twenty-Third Legislature, Supplemental Session of 2006, appropriated $5.175 million for the design and construction of the access road. While the project is estimated to cost approximately five million dollars, it is possible that PSD/WCCC concerns and requirements could add significantly (as much as $1 million or more) to this preliminary cost. Cost inflation up to the bid opening date will likely cause an increase in total project costs, and efforts will be made to assess cost escalations to the mid-point of the construction period. In addition, current

appropriations do not include allocations for design and construction of a parking lot, but the potential for phased implementations of separate road and parking lot components exist, subject to changes in the appropriation language in the upcoming 2007 State Legislative session.

The State Department of Transportation commented that in their previous discussions with the Department of Education, the Department of Accounting and General Services, and the Department of Public Safety, the consensus was that the access road does not qualify for functional classification and inclusion in the State Highway System; therefore, State Highway Special Funds may not be used for the planning, design, construction, operation, or maintenance of the road.

1.9 LEGISLATIVE AUTHORIZATION

The Legislative Authorization for this project, given under Act 160, Item K-15.05, of the Twenty-Third Legislature, Supplemental Session of 2006, is only for the "Design and construction of an access road to Kailua High School from Kalanianaole Highway". The parking lot in Alternatives 1 and 2 will require Legislative authorization and additional funding. Pursuing any of the other alternatives will also require Legislative authorization.

CHAPTER 2.0
AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

2.1 PHYSICAL ENVIRONMENT

2.1.1 Geology

2.1.1.1 Existing Conditions

Alternatives 1-6: The following provides a description of the geological characteristics of the project area, which is subject to erosion. The project design will be cognizant of this issue and mitigation measures will be applied.

The island of Oahu was formed by the Waianae and Ko'olau volcanoes. In the ancient Hawaiian system of land division (*ahupua'a*), the Kailua District, which is located in the center of the extinct Ko'olau Volcano, extended from the top of the Ko'olau Range to the shore along two high ridges. The *ahupua'a* of Kailua included Waimanalo in the southeast to northwest of Kaneohe, and the eastern base of the Ko'olau Range from the southwest to inshore of Mokulua Island to the east. Kailua formerly contained two ocean embayments, but cultural and natural eutrophication processes have caused their remains to evolve into the inland freshwater bodies of Kawainui Marsh and Enchanted Lake (formerly Kaelepulu Pond).

Two series of lava flows comprise the greater part of the Ko'olau Range. The Kailua volcanic series, a dense volcanic plug in what used to comprise a volcanic crater, covers most of Kailua Town and Kawainui Marsh, while the Ko'olau volcanic series comprises the greater part of the Ko'olau Range.

The process of erosion has created a topography characterized by relatively steep slopes and irregular ridges. Elevations range from sea level at Kailua Bay to over 2,000 feet at the crest of the Ko'olau Range.

2.1.1.2 Potential Impacts

2.1.1.2.1 Construction Impacts

Alternatives 1-6: No significant impacts to geologic characteristics within or surrounding the proposed project areas are anticipated to result from the construction of any of the project alternatives.

2.1.1.2.2 Operational Impacts

Alternatives 1-3: The proposed project limits include an area located below the eroding Keaniani Ridge (also referred to as Pu'u o Ehu Ridge). This hillside divides the area between Keolu Hills and Kailua Heights, and Kailua High School and the Women's Community Correctional Center (WCCC), and it creates the potential for natural stormwater channeling and runoff onto the road proposed by Alternatives 1-3.

Alternatives 1, 2, and 6: The road proposed for Alternatives 1, 2 and 6 would have the effect of creating an impermeable surface and would entail impacts associated with increased stormwater runoff and drainage as a result.

2.1.1.3 Potential Mitigations

Impacts associated with increased stormwater runoff and drainage are deemed insignificant; therefore no mitigation measures are required.

2.1.2 Soils

2.1.2.1 Existing Conditions

Alternatives 1, 2, 3, and 6:

Based on data reported from a similar area for the BWS Kailua 272 FEIS (Engineering Concepts, 1996) approximately 0.25-mile makai of the proposed project site and with the same environmental characteristics, and extrapolating this information to the proposed project areas from soil found, the project area is likely to have 2 to 5 feet of soil overlying approximately 7 to 10 feet of weathered rock and a strata of basalt (blue rock).

The Soil Survey prepared by the U.S. Department of Agriculture Soil Conservation Service identifies the near surface soil in the area as Papaa Clay (PyE), on the 20 to 35 percent slopes, and Papaa Clay (PyF) on the 35 to 70 percent slopes. The clay is formed in colluvium and residuum derived from basalt. Papaa clay is usually very dark brown in color and has a sticky and plastic consistency. This soil is characterized as being suitable for pasture use because of the difficulty in working on the slopes and its moderate to severe erosion hazard. The Soil survey gives Papaa clay a Unified Soil Classification of CH, which may indicate a high expansion potential. The Soil Survey also indicates that a thin layer of reddish brown and gray silty clay loam underlies the surface clay. The loam generally exhibits moderate shrink-swell potentials. Below the silty clay loam, the soils transition to weathered rock. The soils exposed along the slopes generally confirm data in the Soil Survey. The surface soil was visually classified as brown and reddish brown clayey silt. Isolated areas also exposed mottled orange brown clayey silt. Rock outcrops were observed in numerous areas, particularly along the ewa (western) slope face, about 75 feet below the hillside, near Alternative 6, the proposed Old Kukanono Community access road. The basalt in the area is fractured but only slightly weathered.

Alternatives 4 and 5: The Pohakupu series consists of deep, well-drained soils that formed in alluvium from basic igneous material. Pohakupu soils are on alluvial fans and terraces and have slopes of 0 to 15 percent. Harold Stearns' book on Geology of O'ahu describes “Jasper Hill,” on Keaniani Ridge in the vicinity of the proposed project Alternatives 1 and 2 access road sites directly makai of Kalanianaole Highway.

2.1.2.2 Probable Impacts

2.1.2.2.1 Construction Impacts

Alternatives 1,2, 3 and 6: Excavation of soil and rock to finish grade for the proposed road and parking lot will generate various levels and pitches of noise--see Section 2.1.9 Noise and Vibration for more detailed information regarding potential impacts and mitigations. Although stormwater runoff is medium to rapid, and workability is difficult, soil conditions should not adversely affect the construction of a new access road.

2.1.2.3 Proposed Mitigations

Alternatives 1-6: The contactor will need a staging area for ready-mix cement trucks, perhaps concrete pump trucks, and asphalt paving equipment for the new road surface. Earth moving and grading equipment will be used on the project and will be parked and maintained in the contractor's base yard, the location of which has yet to be determined. Upon completion of project construction, the grounds utilized will finally be graded and planted with ground cover plants and restored to closely resemble its surroundings.

2.1.3 Topography

2.1.3.1 Existing Conditions

Alternatives 1-6: All the project alternatives are proposed for an area of a large hillside located above Kailua Town and extending mauka up to Mount Olomana. The base of the hillside, bordering Kawainui Marsh, Oneawa Canal, and Kaelepulu Pond, terminates at sea level, and rises in the mauka direction to a maximum elevation of 368 feet above sea level in the vicinity of the WCCC.

Alternatives 1 and 2: The topography of the proposed Alternatives 1 and 2 project areas varies from gently sloped near the access road entrance on Kalanianaole, with a gradually increasing grade in the makai direction for approximately 50-100 meters, and a rapid transition to a moderately steep slope for the remainder of the project area (approximately 0.75 mile) to KHS. Alternatives 1 and 2 also propose a new Akiohala Parking Lot on a moderately sloped hillside with physical geography that visually separates the lot from the Keolu Hills community—see Section 2.1.8 Visual Resources for a more detailed description.

Alternative 3: The proposed new Akiohala Parking Lot, similar to, but slightly larger than the lot proposed for Alternatives 1-2, will be located on a moderately sloped hillside with physical geography that visually separates the lot from the Keolu Hills, Enchanted Lake, and Kailua Heights communities see Section 2.1.8 Visual Resources for a more detailed description..

Alternative 4: Ulumanu Drive sidewalks are proposed for a relatively flat residential neighborhood with a slight mauka-makai slope towards Kawainui Marsh.

Alternative 5: Ulupii street sidewalks are proposed for a relatively flat residential neighborhood with a slight mauka-makai slope from Mount Olomana to KHS.

Alternative 6: The proposed makai Old Kukanono access road is located on a steeply sloped hillside behind, and lower in elevation than the most makai area of the ridge, Keaniani Ridge, also known as Pu'u o Ehu Ridge.

2.1.3.2 Probable Impacts

Alternatives 1 and 2: A 36-foot wide access road would be cut into the hillside, and a parking lot would be grubbed and graded into the hillside.

Alternative 3: A parking lot would be grubbed and graded into the hillside near the present Akiohala student drop-off.

Alternatives 4 and 5: The slopes of the residential lots could be affected by placement of the sidewalk.

Alternative 6: Topography of the hillside and drainage ditch would be impacted by grading for the proposed Makai Old Kukanono Road.

2.1.4 Water Resources

2.1.4.1 Existing Conditions

2.1.4.1.1 Water Sources and Quality

Alternatives 1-6: The mean annual rainfall for this area of Kailua is about 50 inches per year, and much of the area's drainage water flows to Kawainui Marsh, located within a mile of the project site in the ewa (west) direction from the six proposed alternatives. Kawainui Marsh is the largest freshwater body in the State and is on the Ramsar List of Wetlands of International Importance. The broad aim of the Convention on Wetlands (Ramsar, Iran, 1971) is to halt the worldwide loss of wetlands and to conserve those that remain through wise use and management. This means ensuring that activities

which might affect wetlands will not lead to the loss of biodiversity or diminish the many ecological, hydrological, cultural or social values of wetlands.

Alternatives 1-3: The 1937 Territory of Hawai`i Statistics book shows a map of buildings around correction facilities, at the time known as the girl's home, and the map indicates that there is an unnamed stream (confirmed during a 2005 field investigation) located along the base of the hillside behind the WCCC, probably generated from the Kawailoa freshwater spring. The 2005 field investigation also revealed small natural artesian springs at the base of the hillside some distance above the stream, behind the WCCC; however, earthmoving activities over the springs appeared to inhibit the establishment of any wetland ecosystems one might expect to find.

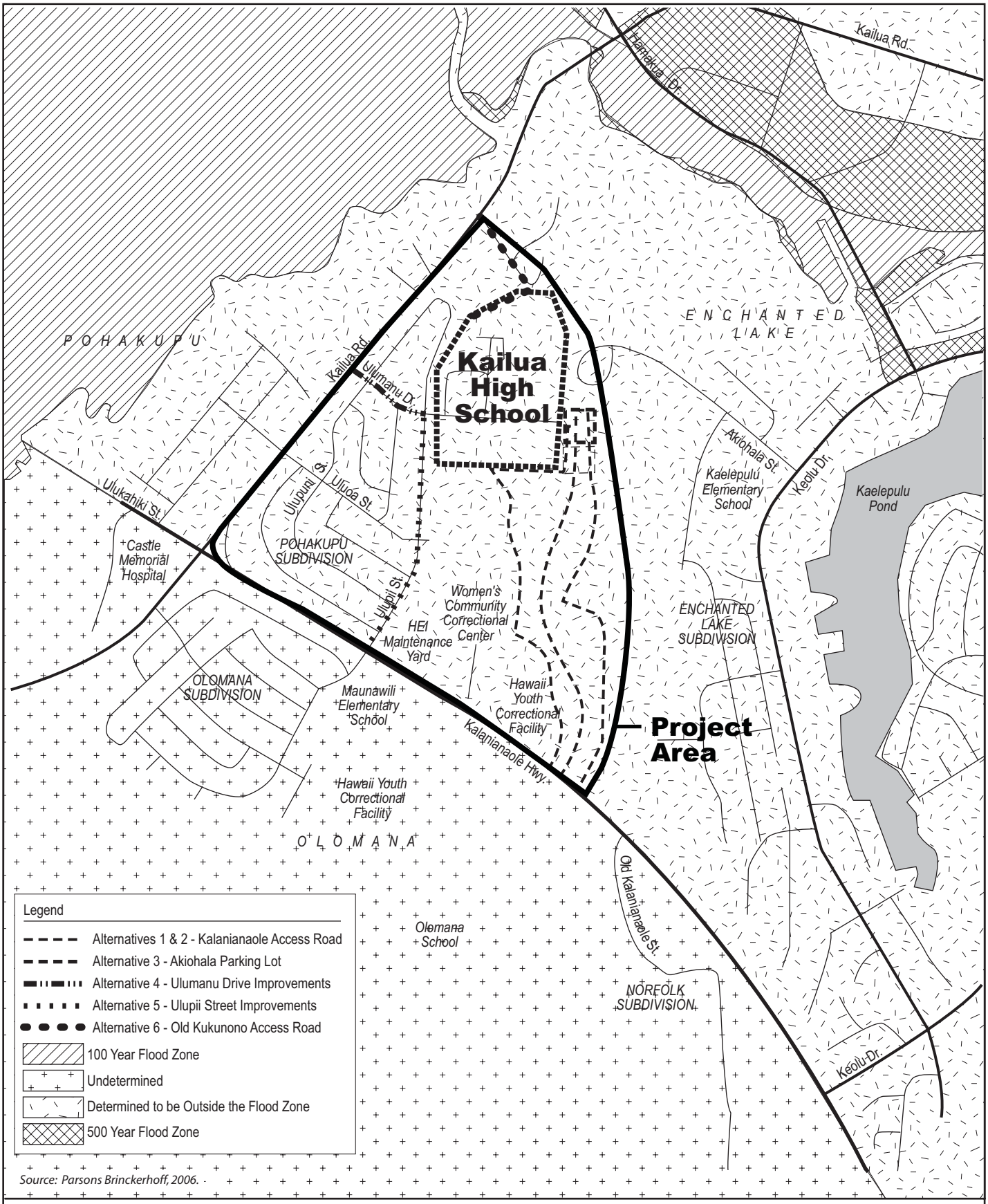
There are a number of springs on the slopes above Kawainui Marsh, and water from these springs is used to irrigate the *loi kalo* (taro patches) around Ulupo Heiau.

2.1.4.1.2 Drainage, Stormwater Runoff and Water Quality

Alternatives 1-6: According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM), all the proposed project areas of the six alternatives are all located outside the 500-year flood plain (Figure 2-1) (FIRM, Panel No. 150001-0090-C, September 28, 1990).

Alternatives 1, 2, 3, and 4: A culvert runs under Kailua Road and channels water from the storm drains in the Pohakupu subdivision to a ditch alongside Ulupo Heiau, and eventually enters Kawainui Marsh. There remains some uncertainty about other sources of water outside the Pohakupu subdivision that may be entering this drainage system.

Alternative 6: The Makai Old Kukanono Community Access Road stormwater runs off from the urbanized lands of Old Kukanono Community and the hillside lands above it and then travels overland to Kailua Road into State Department of Transportation storm sewers that discharge into Kawainui Marsh. The private road of this residential community has no drainage system.



Floodzones

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-1

2.1.4.2 Probable Impacts

2.1.4.2.1 Short-Term Construction Impacts

Alternatives 1-6: Construction activities of the various alternatives are not anticipated to result in discharge into navigable waters. Alternatives 1-6 would have the effect of creating an impermeable surface and would entail impacts associated with increased stormwater runoff and drainage volume as a result.

Alternatives 1, 2, and 6: Because the roads proposed in Alternatives 1, 2, and 6 are anticipated to require construction activities that include clearing, grading, and excavation that result in the disturbance of more than one (1) acre of total land area, an NPDES permit will be submitted. The quality and quantity of the water discharged from the springs downslope could be affected to some extent by increased runoff and turbidity associated with altering the natural ecosystem during construction, but application of Best Management Practices (BMPs) should mitigate any such impacts.

2.1.4.2.2 Long-Term Operational Impacts

Alternatives 1 and 2: The unnamed springs observed during a 2005 field investigation behind the WCCC are likely to be impacted to some extent by the construction of a road. Minor alterations to drainage patterns are likely to result from placement of a graded road along the hillside.

The concept for the proposed project's drainage system is to minimize the drainage structures required. This reduces both initial construction cost and later maintenance issues. The alignment does not cross Kawailoa Springs or the unnamed stream below, and will therefore not affect them.

Alternatives 1 and 2 will include a new parking lot near the existing Akiohala Drop that will be accessed only from the proposed access road and accommodate approximately the same student parking capacity as the existing parking lot (actual dimensions to be determined in project design phase), and it is not anticipated to affect hydrologic resources.

Alternative 3: Alternative 3 will include a new parking lot in the vicinity of the existing Akiohala Drop that will be accessed from Akiohala Street and accommodate approximately the same student parking capacity as the existing parking lot (actual dimensions to be determined in project design phase), and it is not anticipated to affect hydrologic resources.

Alternatives 4 and 5: Construction of the two proposed sidewalks in Pohakupu will have a negligible effect on stormwater runoff and hydrologic resources in the area. While Alternative Four's proposed construction of sidewalks on Ulumanu Street may alter drainage patterns by contributing slightly more storm water runoff due to an increase in impervious surfaces and small alterations to drainage patterns, these changes are not expected to significantly increase levels of pollutants or suspended solids flowing through drainage systems that contribute to the heiau's water resources. The heiau itself lies on top of a freshwater spring, and PVC piping can be seen directing water from beneath the heiau's stone structure to a nearby stream running along the heiau's makai side and leading to a cultural garden that extends down the hillside to Kawainui Marsh.

Alternative 6: The proposed makai road through Old Kukanono has the potential to affect stormwater runoff. The hillside lands above it travels overland to Kailua road into State Department of Transportation storm sewers that discharge into Kawainui Marsh, and the private road of this residential community has no drainage system; therefore, stormwater drainage for Alternative 6 has the potential to adversely affect both the quantity and quality of water potentially entering Kawainui Marsh or Oneawa Canal.

2.1.4.3 Mitigations

2.1.4.3.1 Short-Term Construction Mitigations

Alternatives 1-6: Implementation of permanent post-construction Best Management Practices (BMPs) will be incorporated to decrease the amount of stormwater runoff and improve the water quality of stormwater runoff discharging from the project site.

2.1.4.3.2 Long-Term Operational Mitigations

Alternatives 1-6: Drainage systems will be designed in accordance with the latest versions of the HDOT Criteria for Highway Drainage, and the FHWA Hydraulic Engineers Circulars and Hydraulic Design Series.

Alternatives 1 and 2: The conceptual alignments for Alternatives 1 and 2 traverse several natural drainage features where stormwater collects and travels down slopes. The water moving through these ravines would be intercepted upslope of the new roadway in drainage structures and transported though pipes under the roadway exiting into the original natural drainage feature.

Alternatives 1 and 2 could affect a "Tunnel/Ditch Line," that contains a cement "jacket" which once housed a pipeline that flowed from a pumping station on Kawainui Marsh, over Keaniani Ridge, and into Waimanalo Sugar Plantation. While there are some exposed areas of collapsed tunnel, most of the feature appears to be unexposed. There are no known wetlands or water bodies within any of the proposed Alternatives 1-6 project sites, but there appears to be a natural artesian spring directly adjacent to the Alternatives 1 and 2 sites at the base of the hill, next to the Women's Community Correctional Center. In the event the road will cross the "tunnel/ditch," any exposed conduit will be plugged to prevent the potential for stormwater transmission and potential migration of construction-related silt runoff to Kawainui Marsh.

Alternatives 1, 2 and 6: Water accumulated on the roadways would be collected in drainage structures along the alignment, where necessary, and discharged periodically down slope of the roadway. Wherever possible, storm water will be allowed to sheet flow from the proposed new roadway/parking facilities, in order to promote recharge of the ground water. Final design will incorporate appropriate design considerations that could add permanent devices to the drainage system, in order to minimize erosion issues downstream of discharge points, promote groundwater recharge, and reduce the total discharge volumes.

2.1.5 Flora

2.1.5.1 Existing Conditions

Alternatives 1-3: A botanical survey conducted by Char and Associates in March 1992 for the Kailua 272 Reservoir Final Environmental Impact Statement (FEIS) covers very similar land and ecosystems to those found within the project limits, and the reservoir survey area is directly adjacent and within 0.25 to 0.5-mile from the proposed project site. Therefore, extrapolating the results of this study to the proposed project area is appropriate. A site visit confirmed the similarity in vegetation and ecosystems. On the makai side of the hillside, the 1992 survey found 12 to 18-feet tall koa-haole shrubs (Leucaena leucocephala) on the slopes and Green panicgrass (Panicum maximum var. trichoglume) forming a short dense mat under the koa-haole shrubs with occasional blue potato vines (Solanun seaforthianum) growing over the koa-haole shrubs. Along the top of the hillside, near the area abutting the project site, the vegetation is open and grassy, and the predominant flora includes uhaloa (Waltheria indica), Klu (acacia farnesiana), Cuba jate (sida rhombifolia), and indigo (indigofera suffruticosa). Of the 56 species inventoried in the 1992 field study, 53 were introduced, one may be an early Polynesian introduction, and two are probably indigenous. No endemic, threatened, or endangered plants were found.

In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered floral species, or proposed or designated critical habitat occur on the proposed project sites for Alternatives 1-3.

Alternatives 4-6: These project alternatives occur in residential neighborhoods with typical residential landscaping.

2.1.5.2 Probable Impacts

Alternatives 1, 2, and 3: The botanical surveys of similar surrounding areas and a site visit have revealed that there is no flora of biological interest at the proposed sites, probably due to the fact past uses in the area have included extensive cultivation and grazing. Therefore, potential impact from proposed project alternatives will not entail any significant affect upon biological resources in their respective areas.

Alternatives 4-6: These alternatives are proposed in residential neighborhoods; therefore, none of the proposed project alternatives are expected to have any significant adverse impact on the botanical resources at the sites.

2.1.6 Fauna

2.1.6.1 Existing Conditions

Alternatives 1, 2, 3 and 6: In December 1991 biological consultant Phillip L. Bruner conducted a survey of avifauna and feral mammals for the Kailua Gateway project, which is less than a mile makai of the project site and shares similar habitat and vegetation in a continuous swath of land that wraps around Keaniani Ridge (Pu'u O Ehu Ridge) mauka to makai. No endemic land birds were recorded; however, four endemic and endangered water birds were observed throughout the wetlands associated with the proposed Kailua Gateway site, in the vicinity of Oneawa Canal, and several migratory indigenous birds were observed. Fourteen species of exotic birds were recorded. In addition, mongoose and feral cats were observed, and domesticated horses and cattle were seen on the upper slopes and in the wetlands. In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered faunal species, or proposed or designated critical habitat occur on the proposed project site for Alternatives 1-3.

Alternatives 4 and 5: These alternatives are located in the residential subdivision of Pohakupu; therefore, only fauna typical of an urban setting is present.

2.1.6.2 Probable Impacts

Alternatives 1, 2, and 3: The project is not expected to have adverse impacts upon fauna at the proposed project sites. Unlike the wetlands at the base of Keaniani Ridge (also known as Pu'u O Ehu Ridge) next to Kailua Town, the proposed project sites are not in the vicinity of any wetlands frequented by water birds; therefore, no endemic or endangered water birds should be affected by the proposed project.

Alternatives 4 and 5: No impacts to important fauna are anticipated from the sidewalks being placed in residential areas.

Alternative 6: This alternative is not expected to have adverse impacts upon fauna at the site, but the proposed alternative road project site is in the vicinity of Kawainui Marsh wetlands that are frequented by water birds. The endemic or endangered water birds' habitats could be affected by storm water runoff and drainage from the proposed project, but this alternative has been eliminated from consideration for other reasons, so no impact to fauna will occur.

2.1.7 Historical and Archaeological Resources

2.1.7.1 SHPD Pre-Consultation

In order to gain a better understanding of existing historic resources in the vicinity of the proposed project, on June 15, 2006, a meeting was held with the State Historic Preservation Division (SHPD). Attendees included representatives from SHPD, project archaeological consultant Scientific Consulting Services (SCS), and consultant Parsons Brinckerhoff (PB). The purpose of meeting was to initiate coordination with SHPD on the archeological and cultural aspects of the project, to clarify proposed methodologies, and to assure mutual understandings and expectations of the next steps in planning and design processes. Specific SHPD recommendations are listed in the agency consultation section (Section 5.2.4), and the final Archaeological report will be available to SHPD for review and approval upon submittal of the EA.

2.1.7.2 Exiting Conditions

Alternatives 1, 2, and 3: In July 2005, Scientific Consulting Services (SCS) conducted an archaeological Inventory Survey (Appendix A) on approximately 25 acres of land within and around the proposed project site. The survey consisted of historical background and archival research; a pedestrian survey of the parcel; mapping and description of surface features, and analysis, interpretation, and reporting of all relevant data. Given the relatively low potential for finding significant subsurface deposits in the Area of Potential Effect (APE), no testing (excavation) was conducted; however, the consultant did recommend archaeological monitoring during construction.

Two archaeological sites were identified and recorded during the survey (Figure 2-2). The first is TS-1, a Pre-Contact lithic procurement site (stone tool mining and

manufacturing) with small amounts of crypto-crystalline silicate (CCS) and volcanic glass debitage (artifact stone flakes) on the ground surface, located on an eroded hillside top near the southeast corner of the project area and outside of the boundaries of the project Area of Potential Affect (APE). Site TS-2 is a Historic water-flow control structure located within the northern half of the project APE. USGS quadrangle maps indicate that it is part of a plantation era pipeline-tunnel system that connected a Kawainui Marsh water source to commercial sugar cane fields in Waimanalo. This irrigation structure consists of two features: a rectangular construction of large, hand-shaped, basalt rocks, stacked with mortar/concrete; and a concrete-encased valve/pumping station, adjacent to the main structure.



N

SCALE:

0 1/8 mi. 1/4 mi.

Archaeological Sites Aerial View for Alternatives 1 & 2 Area of Potential Effect (APE)

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-2

The archaeological consultant also located and identified a potential cultural resource in the vicinity of the proposed project. A *ki* (ti) planting (Figure 2-2) was noted and referenced in the Archaeological Report (Appendix A), and is further detailed in the cultural resources discussion found in Section 2.1.8.

Alternatives 4 and 5: Residential urbanized settings exist for Alternatives 4 and 5.

Alternative 6: The Makai Old Kukanono Alternative occurs in a residential urbanized setting.

2.1.7.3 Probable Impacts

Alternatives 1, 2 and 3: No affect is anticipated to any potentially significant historic resources located within the project area.

Alternatives 4-6: No affect is anticipated to any potentially significant historic resources located within the proposed Alternatives 4-6 areas, due to the existing urbanized residential nature of the settings.

2.1.7.4 Potential Mitigations

Alternatives 1-6: The Office of Hawaiian Affairs (OHA) has requested that if iwi or Native Hawaiian cultural or traditional deposits are found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. Project planning and execution will implement OHA's request.

Alternatives 1-3: Given that much of the ground surface within the Alternatives 1-3 project areas was obscured by vegetation, and because of the steep terrain within the project area; although it is highly unlikely, there is still a moderate chance of encountering traditional sites and/or features missed during the Inventory Survey. The archaeological consultant has recommended that given the extremely dense and widespread vegetation, Archaeological Monitoring should be included for all future construction in the Alternatives 1-3 Area of Potential Affect (APE).

2.1.8 Cultural Resources

Letters were sent to various culturally related organizations and individuals in the community. Kailua community groups and *kupuna* were informed of the proposed project and asked to contribute as cultural informants, helping to document past uses of the project area, as well as potential impacts to cultural resources.

2.1.8.1 Existing Conditions

Alternatives 1, 2, and 3: A cultural impact assessment was prepared in June 2006 by Parsons Brinckerhoff (Appendix B). Two potential cultural resources have been identified in the vicinity of the proposed project: a *ki* (ti) planting (Figure 2-2), also referenced in the Archaeological report (Appendix A), and within 50 feet of the *ki* planting, irrigation features that may have been an earthen *lo'i kalo* (taro patch) built on the hillside. Based on interviews with informants and a site investigation, both were determined to be Hawaii Youth Correctional Facility cultural awareness projects constructed approximately 10-15 years ago, and they have since been abandoned. The lack of maintenance of the irrigation feature has allowed 10-15 foot *koa haole* trees to grow, and because it is of an un-enforced earthen structure, it is eroding away into obscurity.

Alternatives 4 and 5:
Cultural resources in the proposed areas for both alternatives consist of the range of typical activities taking place in a residential community.
Ulupo Heiau is an epicenter of Hawaiian cultural activity in the Kailua Area and is within approximately 0.5-mile from proposed project Alternative 4. The heiau itself lies on top of a freshwater spring, and PVC piping can be seen leading from beneath the heiau's stone structure to a nearby stream running along the heiau's makai side, used to irrigate a surrounding cultural garden.

Alternative 6: No cultural resources or activities are known to exist in the area other than those typically taking place within a residential community.

2.1.8.2 Probable Impacts

2.1.8.2.1 Short-Term Construction-Related Impacts

Alternatives 1-6: No short-term construction-related impacts are anticipated to result from implementation of any of the project alternatives.

2.1.8.2.2 Long-Term Operational Impacts

Alternatives 1 and 2:

Both the *ki* (ti) planting and the irrigation features are likely to be impacted by the construction of an additional access road.

Concerns were expressed that the Kailua High School Imu Program facilities and functions could be impacted by proposed project alternatives. There is no anticipated impact to the Imu Program or its facilities for any of the project alternatives.

Alternative 3: No known resources exist in the vicinity of Alternative 3; therefore, no cultural affects are anticipated.

Alternatives 4 and 5: No significant cultural impact from sidewalk improvements are anticipated in these residential neighborhoods. While Alternative 4 is located within 0.5-mile of Ulupo Heiau, there are no anticipated impacts to the heiau's cultural or natural environs, largely because Kailua Road, a major local transportation corridor, separates proposed project areas from Ulupo resources. While Alternative 4 proposes construction of sidewalks on Ulumanu Street and may alter drainage patterns by contributing slightly more storm water runoff due to an increase in impervious surfaces and small alterations to drainage patterns, these changes are not expected to significantly increase levels of pollutants or suspended solids flowing through drainage systems that contribute to the heiau's water resources.

Alternative 6: No significant cultural resources are expected to be impacted.

2.1.8.3 Mitigations

Alternatives 1 and 2: If possible, the road alignment should attempt to avoid the *ki* (ti) and the irrigation features located on the hillside. While the *ki* (ti) planting appears to be surviving on ambient inputs without being cared for, because the irrigation features are of earthen construction materials only, the structure will eventually erode to a

unrecognizable and dysfunctional state. Under the No Build alternative, the irrigation system features will slowly disintegrate over the next 10-15 years; therefore, mitigation is not recommended for the impermanent resource.

2.1.9 Visual Resources

A Visual Impact Assessment (Appendix C) was conducted for the project in order to inventory and assess potential impacts to visual resources in the vicinity of the project, and the following sections summarize the results of that report.

2.1.9.1 Existing Conditions

Alternatives 1,2, and 3: Mount Olomana, recognized as a sacred Hawaiian place, is located less than one mile from Alternatives 1 and 2, and the project area represents one of the last significant uninterrupted terrestrial green belts leading down to Kailua Town.

Alternatives 4 and 5: The visual environment for these alternatives is characterized by single-family residential neighborhoods without sidewalks and with minimal drainage features.

Alternative 6: The visual environment for this alternative is characterized by a private road with single-family residential dwellings and no sidewalks or drainage features.

2.1.9.2 Probable Impacts

Alternatives 1 and 2:

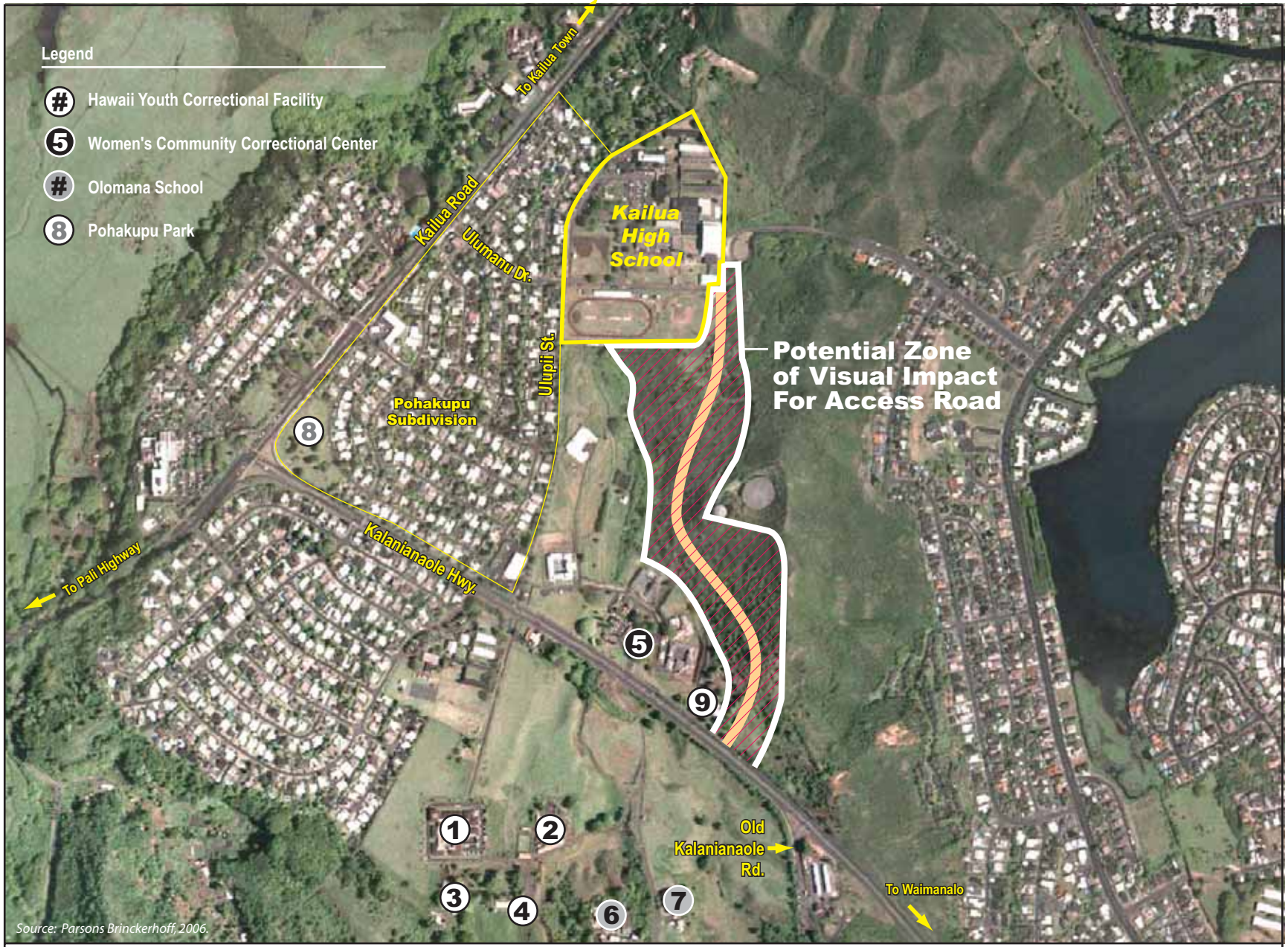
Project Footprint Physical Characteristics: The project footprint is anticipated to be small, consisting of two paved lanes—one in each direction--and each lane will be 12-feet wide with a two-foot shoulder. An ADA compliant pedestrian route will also be installed throughout the entire project on the eastern edge of the access road in accordance with Americans with Disabilities Act (ADA). Possible additions such as bicycle paths and fences and/or caged enclosures of the road could affect the appearance of the project as its design needs continue to evolve.

Potentially Impacted Viewer Groups: The views from three correctional facilities will be affected by implementation of Alternatives 1 or 2: the State of Hawaii's Women's

Community Correctional Center (WCCC), the Youth Correctional Facilities (HYCF), and Olomana School. The project will be visible to varying extents from many of the institutional buildings housing State corrections and education populations on Mount Olomana. Due to decreased viewing distance, impacts will be greatest at the WCCC and HYCF facilities directly adjacent to the proposed project area (see Figure 2-3).

Potential Public Facilities Impacts: Pohakupu Park views will be unaffected by implementation of Alternatives 1 or 2, due to the fact the park is 0.5 to 0.75-mile away from the hillside road location (Figure 2-3), and also because the Keaniani Ridge views from the park are mostly blocked by tall trees except for limited and intermittent glimpses of the hillside—see the Visual Impact Assessment report (Appendix C) for a more detailed description of potential impacts.

Community Plan Implications: The development of an access road is not anticipated to adversely impact scenic vistas or view planes identified in County or State plans or studies. In the Kailua area, the Ko'olaupoko Sustainable Communities Plan calls for preservation of scenic views of ridges, upper valley slopes, shoreline areas from trans-Ko'olau (e.g. the Pali Highway--Honolulu to the Windward Side) and coastal highways; from coastal waters looking mauka (e.g. looking mauka from Kailua Beach); and from popular hiking trails that extend toward the Ko'olau Mountain Range and mauka from Kawainui Marsh (e.g. views from Mount Olomana). None of the aforementioned community plan concerns are expected to be impacted by the proposed project. Distant views from the Pali Lookout, the Pali Highway hairpin turn (i.e. at the Maunawili Valley hikers' parking) and for those walking on the Old Pali Road will not be impaired (Figure 2-4). The Ko'olaupoko Sustainable Communities Open Space Map identifies distant views from the Pali Lookout and at the Windward Side Pali Highway hairpin turn parking area less than 0.25-mile from St. Stephan's Diocesan Center (Figure 2-5), but as mentioned previously and illustrated in Figure 2-4, those distant views are not likely to be impacted due to the approximate 2-3 mile distance between the views and the proposed project area.



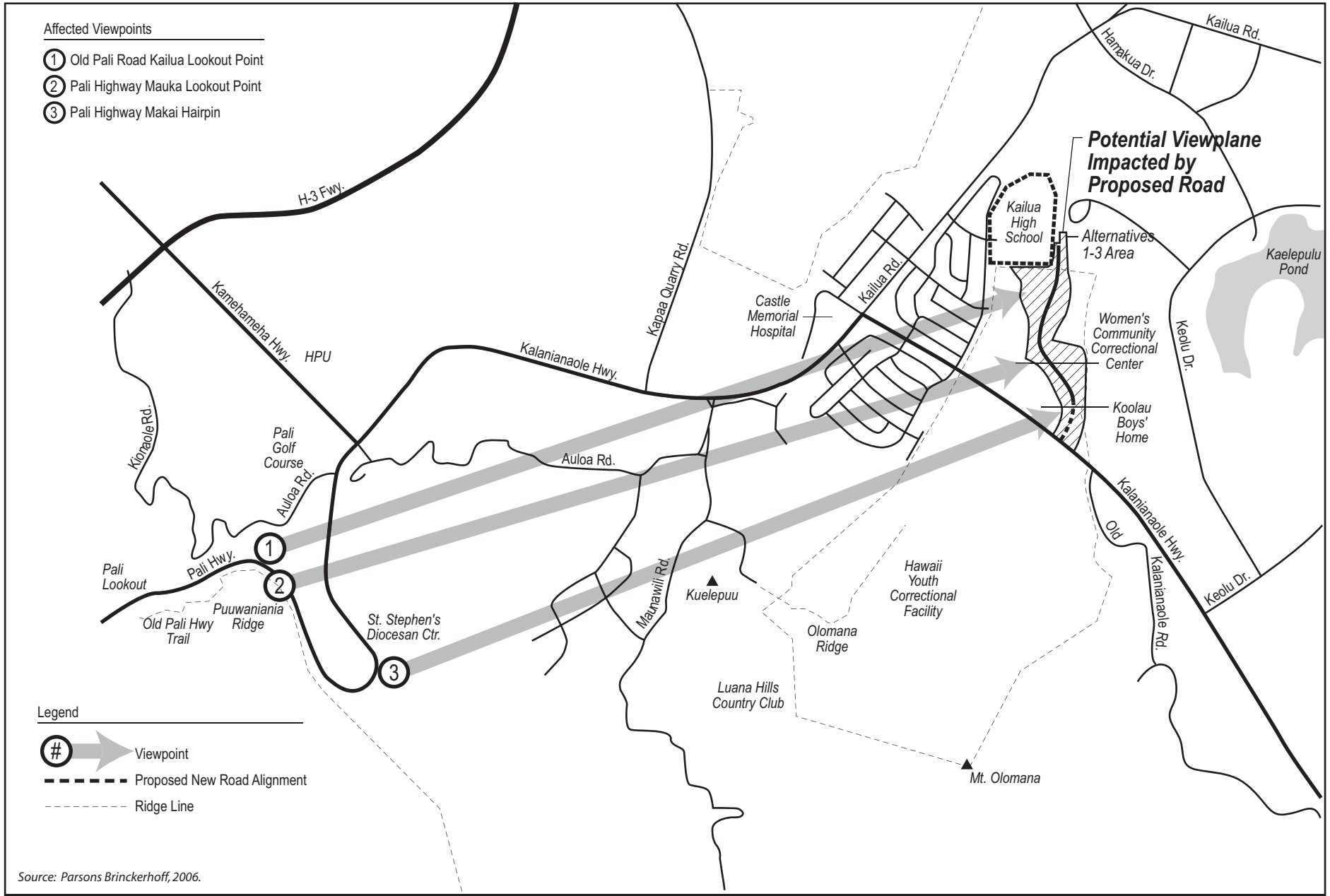
N

SCALE:

0 1/8 mi. 1/4 mi.

Potentially Affected Viewplane for Road and Parking Lot Proposed by Alternatives 1 and 2

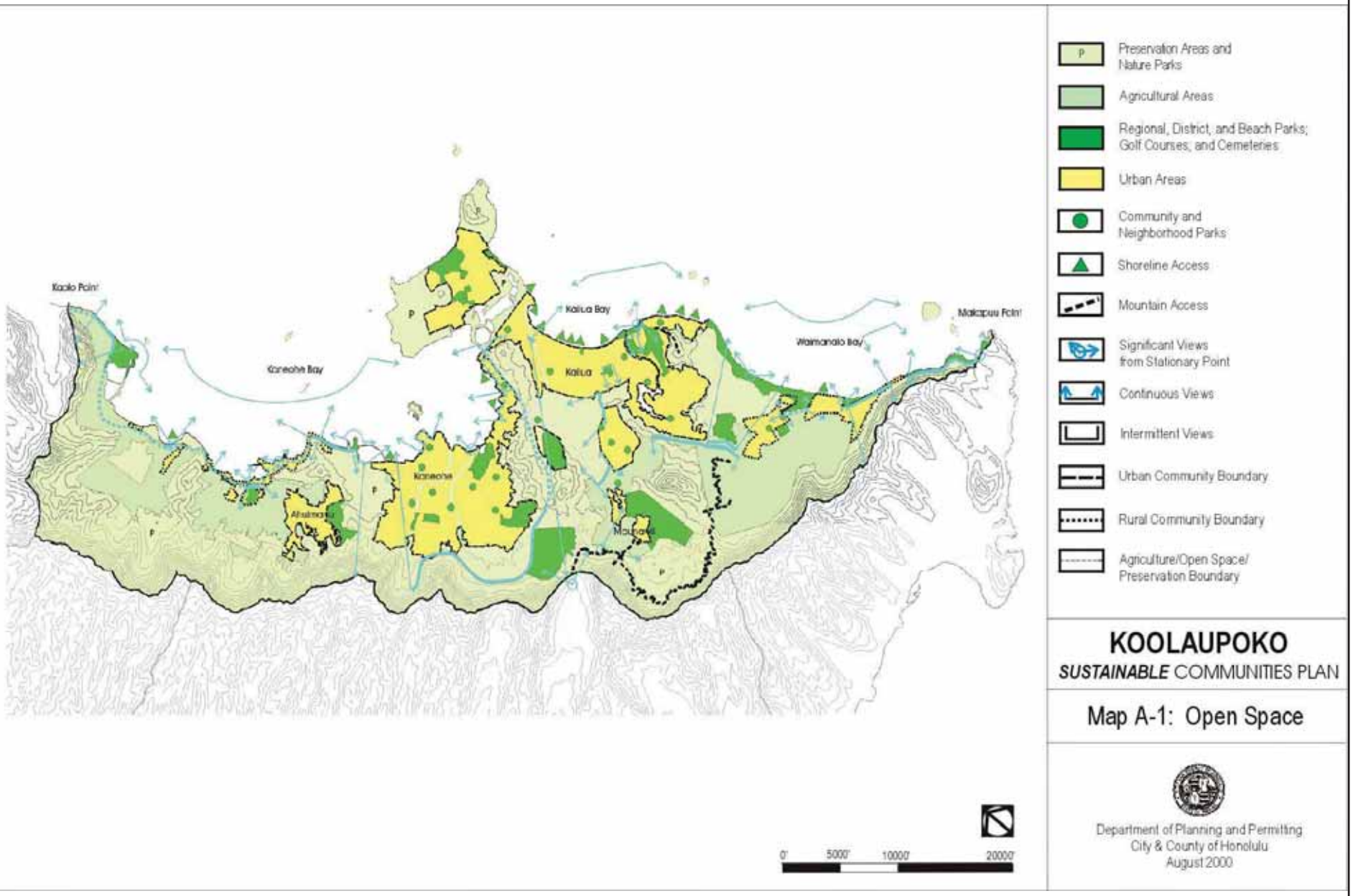
Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-3



Source: Parsons Brinckerhoff, 2006.

Distant Viewpoint Analysis

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-4



N

SCALE:

0 1/8 mi. 1/4 mi.

Open Space

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-5

For hikers, some of Mount Olomana's views will be affected to an extent (Figure 2-6). Keaniani Ridge (Pu'u O Ehu Ridge) represents one of the few densely vegetated open spaces visible in the makai direction from Mount Olomana, and the ridge comprises the lower slope of Mount Olomana on the makai side of Kalanianalole Highway.

Alternatives 1-3: These proposed alternatives all include a parking lot in the vicinity of the present KHS Akiohala drop-off, and the parking lot is not likely to be visible to any viewer groups other than those who will use it.

Alternative 3: This alternative's parking lot is in the vicinity of the designated KHS Akiohala drop-off, and although it is slightly larger than the lot proposed for Alternatives 1 and 2, due to the fact the parking lot location is shielded from these areas by the natural topography of the hillside, there is no anticipated visual impact upon viewer communities located in Keolu Hills, Enchanted Lake, Kailua Heights, WCCC, HYCF, and Mt. Olomana.

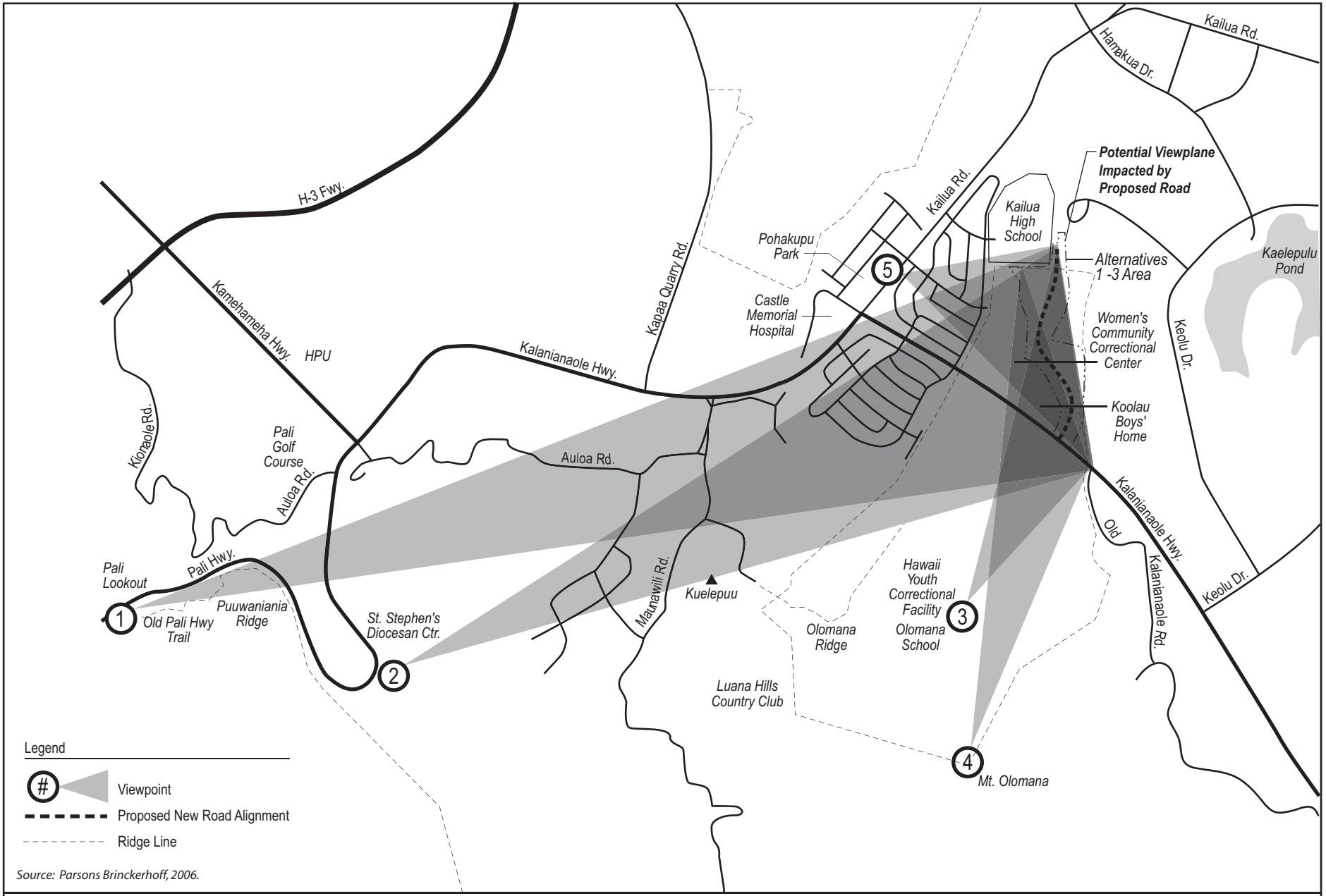
Alternatives 4 and 5: New sidewalks within the residential subdivision will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes along Ulupii Street and Ulumanu Drive.

Alternative 6: New sidewalks within the residential neighborhood will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes of Old Kukanono Community.

2.1.9.3 Beneficial Visual Impacts

Alternatives 1 and 2: No beneficial visual impacts are anticipated to result from the proposed project, except possibly along the edge of the Kalanianaole Highway at the proposed road's entry point, assuming landscaping and maintenance of the entryway will provide a more pleasant aesthetic than the existing overgrown koa-haole forest.

Alternatives 3-6: No beneficial visual impacts are anticipated to result from the proposed project for these alternatives.



Viewplane Analysis

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-6

2.1.9.4 Potential Mitigations

Alternatives 1 and 2: The Proposing Agency (DAGS) recognizes the open space value of Keaniani Ridge (Pu'u O Ehu Ridge) and views from Mount Olomana and facilities in the vicinity and they are committed to designing the development to minimize visual and scenic impacts and the loss of open space. Impacted views of the WCCC, the HYCF, and Olomana School institutional settings could be mitigated through landscaping the road. Cultural informants have suggested that Loulu palms would be appropriate due to their historic association with Kailua. The entire Visual Impact Analysis Report is located in Appendix C.

2.1.10 Noise and Vibration

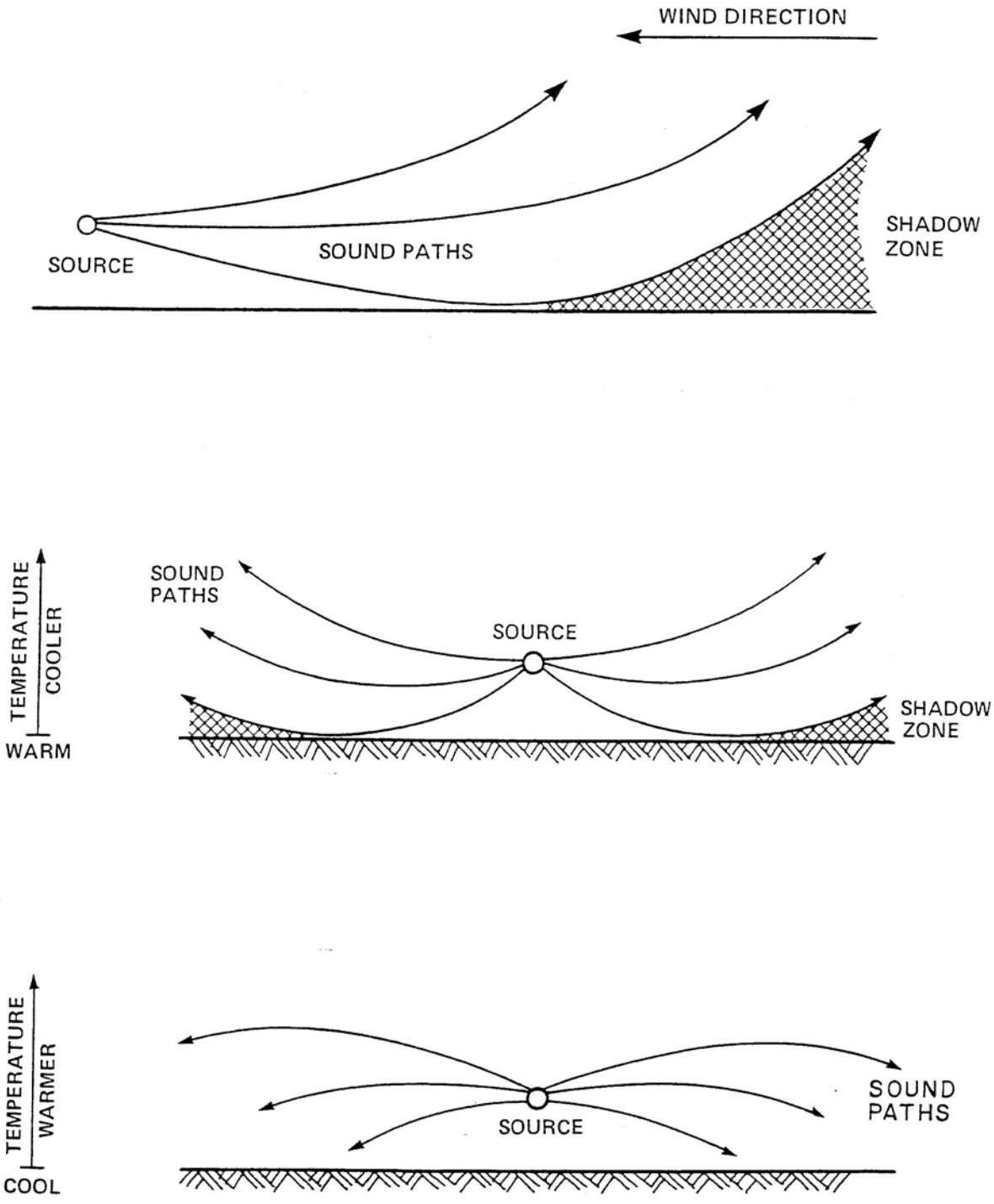
2.1.10.1 Sound Propagation Outdoors

Alternatives 1-6: The transmission of sound from the job site to surrounding areas is influenced by three broad types of natural effects: distance, atmospheric, and terrain and vegetation. In addition, structures such as barriers and buildings influence the transmission of sound to neighboring areas. The various atmospheric effects discussed above are illustrated on Figure 2-7.

2.1.10.2 Short-Term Construction-Related Noise and Vibration

2.1.10.2.1 Existing Conditions

Alternatives 1-6: Regarding the rock substrate present, extrapolating the characteristics encountered in an area of the hillside in close proximity, approximately 0.25 to 0.5mile makai of the proposed project (Engineering Concepts, 1996), and with relatively the same environmental characteristics; the site was found to have 2 to 5 feet of soil overlying about 7 to 10 feet of weathered rock and a strata of basalt (blue rock). Approximately three acres of grading is anticipated for the mile-long roadway proposed in Alternatives 1 and 2, and the parking lot for those alternatives and Alternative 3 could encompass as much as another third of an acre of grading.



SOURCE: NOISE AND VIBRATION CONTROL FOR MECHANICAL EQUIPMENT U.S. GOVERNMENT, DECEMBER 1983

Climatic Influences on Sound

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-7

2.1.10.2.2 Probable Impacts

Alternatives 1-6:

Noise will be generated by construction equipment vehicles involved in grubbing and grading the new roads proposed in Alternatives 1, 2 and 6; the new parking lot for Alternative 3; and constructing the new pedestrian and drainage improvements for Alternatives 4 and 5. These construction phases may generate significant amounts of equipment noise; the actual levels are dependent upon the methods employed by the contractor during each stage of construction.

Noise levels for potentially utilized excavation and construction equipment are presented in Table 2-1, and typical ranges for different types of construction equipment are shown in Figure 2-8. The noise levels presented are at a reference distance of 15 m (50 feet). Since construction equipment noise levels decrease at a rate of approximately 6 dBA per doubling of distance, at 30 m (100 feet) the noise levels would be about 6 dBA less than the levels shown at 15 m (50 feet). Similarly, at 60 m (200 feet) the noise levels would be 12 dBA less than shown. Intervening structures or topography can function as noise barriers, further reducing noise levels.

Table 2-1

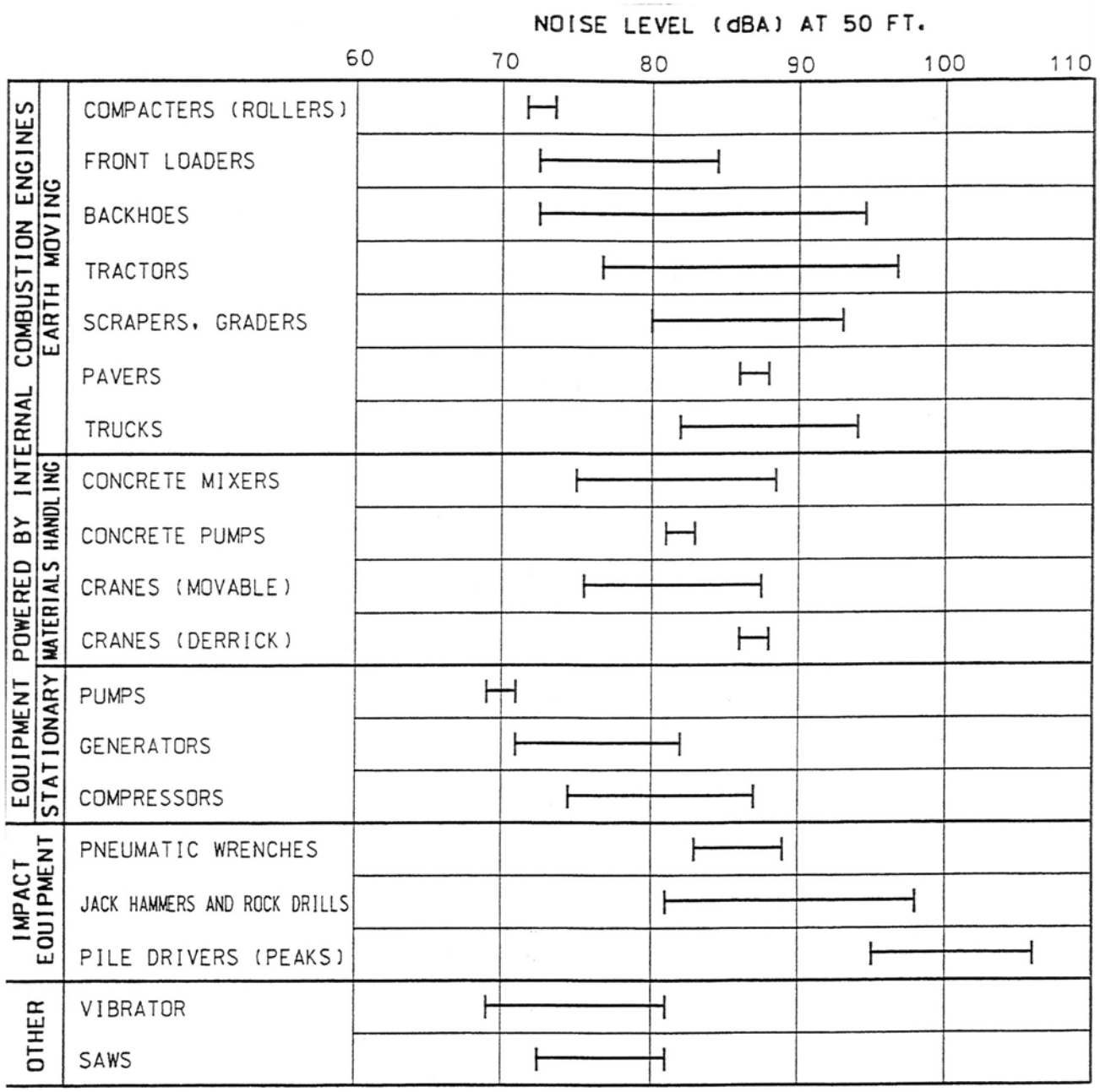
Construction Equipment Noise Levels

Source	L_{max} at 15 m (50 feet)	Model Tested
Backhoe	85 dBA	John Deere 609A
Front Loader	84 dBA	Caterpillar 980
Dozer	84 dBA	Caterpillar D7e
Grader	91 dBA	Caterpillar 16
Scraper	92 dBA	Caterpillar 660
Compressor	80-89 dBA	Various Tested
Pile Driver	95-100 dBA	Various Tested

Source: Federal Highway Administration, Highway Construction Noise: Measurement, Prediction, and Mitigation, 1976.

As in most development projects, construction noise will likely exceed the allowable limits in the regulations of HAR Chapter 43, "Community Noise Control for Oahu," since the noise standards are set and measured at the job site property line. Consequently, a noise permit will be obtained from the Hawaii State Department of Health (DOH) that will specify the allowable conditions under which noise-producing operations can occur (i.e., restricted time periods of the day, restricted days, etc.). The contractor's construction equipment that emit exhaust gas or air and roadway transit vehicles must be equipped with mufflers to meet the noise level limits of Chapter 42, "Vehicular Noise Control for Oahu."

The State Department of Health (DOH) maintains community noise control standards that apply to construction noise. None of the alternatives proposed for the project would exceed the stipulated noise limits unless a variance is granted by DOH.



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

Construction Equipment Noise Ranges

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-8

Construction noise and vibrations represents a short-term impact on the environment. The duration and level of construction noise depend on the phase of activity, such as:

- ground clearing, demolition and removal of existing structures, trees, rocks and soil;
- excavation;
- placement of foundations and roadbeds;
- erection of structures including retaining walls; and
- finishing, including filling, grading, paving, landscaping and cleanup operations.

The first two phases: ground clearing and excavation, typically generate the highest noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators can reach levels from 67 dBA to 98 dBA at 15 m (50 feet). Construction equipment noise emissions are regulated by the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). Presently, air compressors are the only equipment under regulation, and no new regulations are currently under consideration.

Alternatives 1 and 2: Three noise-sensitive sites are within 0.25-0.5 mile of the road proposed for Alternatives 1 and 2: WCCC, HYCF, and Kailua High School. Construction noise will be audible for those receptors, although at reduced levels.

Alternative 3: The main noise-sensitive receptors for the Alternative 3 (Akiohala Drop Parking Lot) are Kailua High School and a few potential Pohakupu residents whose backyards are in the vicinity of the proposed project activities.

Alternatives 4 and 5: Sidewalk and drainage improvements for Ulupii Street and Ulumanu Drive have resident noise-sensitive receptors within 50 feet throughout their length.

Alternative 6: The proposed road crossing Old Kukanono Community is within 100 feet of noise sensitive receptors for most of its length.

2.1.10.2.3 Proposed Construction-Related Mitigations

Construction noise can be controlled by using noise control devices (exhaust mufflers, intake silencers, etc.) and barriers (partition shields) and by scheduling construction

activities during off-peak hours to avoid inconvenience to motorists, residents, and the high school.

The contractor could also schedule the final phases of excavation activities producing high sound levels during the summer months when regular classroom activities are not in session. Remaining construction activities would mainly involve grading and road construction. Specific construction operations that exceed the DOH standards may also be performed after 2:30 p.m.

2.1.10.3 Blasting Noise and Vibration Impacts

Alternatives 1, 2, 3, and 6:

Besides vehicle-related noise, detonation of small explosives, if necessary, to fragment rock, will also induce noise and vibration effects at the job site and immediate surrounding environs. Blasting will induce ground and air vibrations with potential to startle or disturb surrounding residents and potentially damage structures.

Due to the amount and type of excavation involved in this project, and from the perspective of economics and timeliness, it may be desirable to use the faster method of small explosives blasting to fracture hard basalt, when encountered. The most expeditious manner of construction will help to mitigate the duration of noise exposure and construction-related impacts.

Blast-induced ground and air vibrations have the potential to startle or disturb surrounding residents and cause damage to structures. The air blasts associated with blasting are concussion type, low frequency vibrations that are of short duration (or impulsive) and are generally characterized in terms of peak overpressure in pounds per square inch (psi), or in decibels (dBL). The dominant sources of the air blast are the Air Pressure Pulse, which is caused by the large displacement of the ground surface near the explosive charge, and the Stemming Release Pulse, which is caused by gas pressure ejecting the stemming material placed in the borehole to set the explosive charge.

2.1.10.3.1 Air Blasts

The low-frequency characteristic of air blast noise tends to induce vibrations in structures, sometimes causing complaints from some receptors. In contrast, high frequency sounds of equal amplitude to blast noise generally do not induce vibrations and/or cause physical damage to structures. Low-frequency air blast sounds are inaudible to humans, but structures that vibrate from shock waves can produce secondary audible effects such as rattling sounds of fixtures, doors, etc. Sound levels at which these secondary effects occur tend to vary with the weight and the stiffness of the structure. In general, the inception point of sound-induced vibration is difficult to establish, but it may occur at levels as low as 80 dBL. These levels are significantly below the peak air blast levels of 120 to 136 dBL, which have been associated with low risk of damage to structures; therefore, sound-induced secondary audible effects that may be felt, will not necessarily cause damage to structures.

2.1.10.3.2 Seismic Waves

Ground vibrations, or seismic waves, are also generated during blasting operations and are generally described in terms of peak particle velocity in inches per second. Most of the seismic energy remains confined in the ground, but some energy is released as an overpressure pulse into the air (or Rock Pressure Pulse). Typically, the ground vibrations as well as the airborne Rock Pressure Pulse are expected to be less intrusive than the Air Pressure and Stemming Release Pulses.

2.1.10.3.3 Lessons Learned From Similar Projects

A similar road and reservoir excavation project used blasting in the mid-1990s at the Board of Water Supply's Wa'ahila 180 reservoir on Dole Street, near the Manoa Stream Bridge. The closest structure to the blast holes was the University of Hawaii faculty housing building, whose distance ranged from approximately 120 to 460 feet from the blast holes. These distances are similar to the separation distances for the additional access road proposed by Alternatives 1 and 2 and the surrounding Women's Community Correctional Center (WCCC) and the Hawaii Youth Correctional Facility (HYCF) buildings, as well as the distances from Alternative 3 and a few Pohakupu residents' backyards. For the Wa'ahila 180 project, maximum vibration levels induced by blasting were controlled so as not to exceed 0.5 inches per second at the faculty

housing building, with air blast levels limited to 119 dBL. No damage was caused by blasting work on the Wa'ahila 180 reservoir project, and no extraordinary or unusual mitigation measures were required to control air blast noise or ground vibration levels. Like the Wa'ahila 180 project, where residential distances ranged from 120 to 460 feet, blasting for proposed Alternatives 1-3 should have a minimal impact upon activities at the HYCF, WCCC, or Pohakupu residents, which are located at least 300 feet away. Constructing the road below the crest, or top of the ridgeline of Keaniani Ridge (Pu'u o Ehu Ridge), will protect Keolu Hills, Kailua Heights, and Enchanted Lake residents from noise-related impacts.

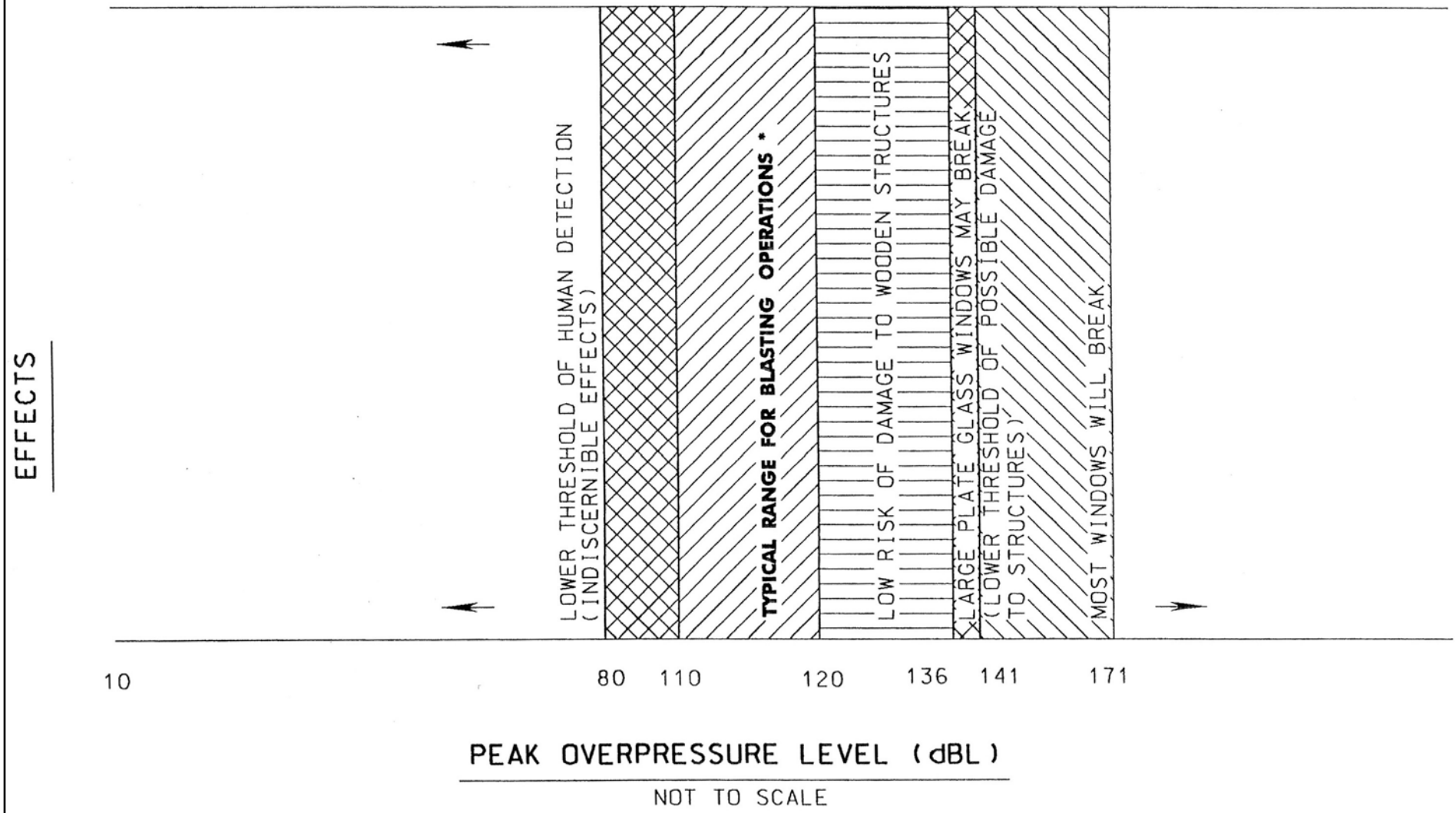
A summary of vibration effects associated with ground blasting is shown in Figure 2-9.

2.1.10.4 Potential Mitigation Measures

Alternatives 1-3:

Since complaints resulting from air blast noise levels could occur at levels considerably below those necessary to cause damage to structures (120 to 136 dBL), additional mitigation measures will probably be required to minimize risks of annoying WCCC inmates, HYCF clients, and possibly a few Pohakupu residents whose backyards face the direction blasting will be taking place. These recommended mitigation measures are described as follows:

- A monitoring program can be implemented to identify a safe level of air blast and ground vibration simultaneously on the hillside and at homes and State facilities that are closest to the source of the blast.
- If possible, blasting can be scheduled during fixed time periods that can be publicized and made known to area residents. Because the ability to predict peak overpressure or ground vibration levels versus distance from the blast is not precise, initial uncertainties for a given location are on the order of 20 to 30 dBL. For this reason, it is standard practice to employ site-specific seismograph monitoring of air and ground vibrations during actual blasting operations, with a 3-axis geophone instrument to monitor ground vibrations and a microphone to monitor air vibrations.



Vibration Effects of Excavation Blasting

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-9

In conducting blasting operations, the construction industry generally requires seismograph monitoring at the structures closest to the boreholes. Based on the monitoring data, explosive charge sizes (or weights) can be adjusted in order to limit peak overpressures of the air blasts to levels below the threshold of possible damage to structures.

- Blasting operations exceeding 95 dBL that could impact residents or public facilities could be restricted to the hours of 9:00 a.m. to 5:30 p.m. of the same day, and to weekdays only (excluding holidays). For other noise sources associated with excavation operations, State Department of Health permit procedures and requirements for construction activities would be applied.
- Use of erosion control earthen berms and construction of other temporary perimeter barriers could be implemented to reduce noise and contain any loose material that maybe dislodged during blasting.

Alternatives 1-6:

Noise control measures during construction would be required to minimize impacts on existing noise sensitive land uses. The measures recommended in this section should be re-evaluated in greater detail during preliminary design because impacts to residences cannot be accurately determined without detailed construction plans and schedules.

General abatement measures presented below are recommended as guidelines in developing construction plans that consider the adverse impacts of construction noise.

1. Design Considerations - During the early stages of construction plan development, natural and artificial barriers such as ground elevation changes and existing buildings, can be considered for use as shielding against construction noise. Strategic placement of stationary equipment, such as compressors and generators, could reduce impacts at the sensitive receivers.

2. Construction of Noise Barriers During Initial Stages - Noise barriers could be constructed during the initial stages to reduce the impacts of construction. Initial construction of noise barriers would significantly reduce construction noise impacts at the sensitive receivers.

3. Alternate Construction Methods - Certain phases of highway construction work, such as pile driving, could produce noise levels in excess of acceptable limits, even when feasible noise reduction methods are used. These impacts may be reduced by using alternate methods of construction. In the case of pile driving, vibration or hydraulic insertion could be used. Drilled holes for cast-in-place piles are another alternative that would produce significantly lower levels of noise.

4. Source Control - The contractor shall comply with HDOT Standard Specifications and all local sound control and noise level rules, regulations, and ordinances, which apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the job, or related to the job, shall be equipped with a muffler of a type recommended by the

manufacturer. No internal combustion engine shall be operated on the project without a muffler.

5. Time and Activity Constraints - The noisier activity involving large machinery could be limited to daytime hours when most people normally impacted are either elsewhere or engaged in less noise sensitive activities. Nighttime construction would require a variance. Compliance with local Noise Ordinances will mitigate impacts associated with construction noise. To comply with the ordinance, all construction activities adjacent to residential uses will be limited to daytime hours (7:00 a.m. to 7:00 p.m.) on Monday through Saturdays.

6. Community Relations - Community meetings, including those with KHS, PSD and the DOE, can be held to explain the construction work, time involved, and the control measures to be undertaken to reduce the impact of the construction noise.

The aforementioned measures can be incorporated into site specific construction plans to minimize noise impacts to sensitive receivers along the project corridor. Noise emission limits could be developed, construction hours could be set, and noise level criteria could be decided upon and adhered to during construction.

Potential noise receptors in the vicinity of sites proposed for Alternatives 1-3 include the nearby Old Kukanono Community residential lots situated makai (south) of Kailua High School for Alternative 3, and Pohakupu residences located mauka of Alternatives 1, 2 and 3. Based only on the earlier described distance effect principle of outdoor sound propagation and sound transmission attenuation for receptors at different distances, and based on a noise source in direct line of sight to a sound receiver, it is estimated that construction sound levels will be reduced to between 18 and 25 decibels at such sites as follows:

Table 2-2

Estimated noise level Reduction due to distance

Transmitted Noise Level*		
@ Jobsite (Noise Source)	@ Old Kukanono (400 ft away)	@ Kailua High School (900 ft away)
95 dBL (tractor/trucks)	77 dBL	70 dBL
75 dBL (front loaders, backhoes, and concrete pumps)	57 dBL	50 dBL
* Estimated noise level reduction due to distance effect alone. Excludes effects of atmosphere and terrain/vegetation.		

For comparison, typical noise levels of sounds encountered almost daily are shown in Table 2-3, and long-term land use compatibility and sound levels are shown in Table 2-4. Noise levels from the job site are measured at 1,000-foot distances and will be near normal office and conversation levels. The allowable noise level of HAR Chapter 43 regulations on Community Noise Control for residential and preservation districts is 55 dBL during the daytime hours between 7:00 a.m. and 10:00 p.m. Consequently, there may be times during which noise from tractors and trucks will exceed these noise levels. A variance from the Department of Health may be required by the contractor. Noise barriers such as fences may be constructed along side of the site to deflect sound upward.

Construction noise represents a short-term impact on the noise environment. The duration and level of construction noise depend on the phase of activity, such as:

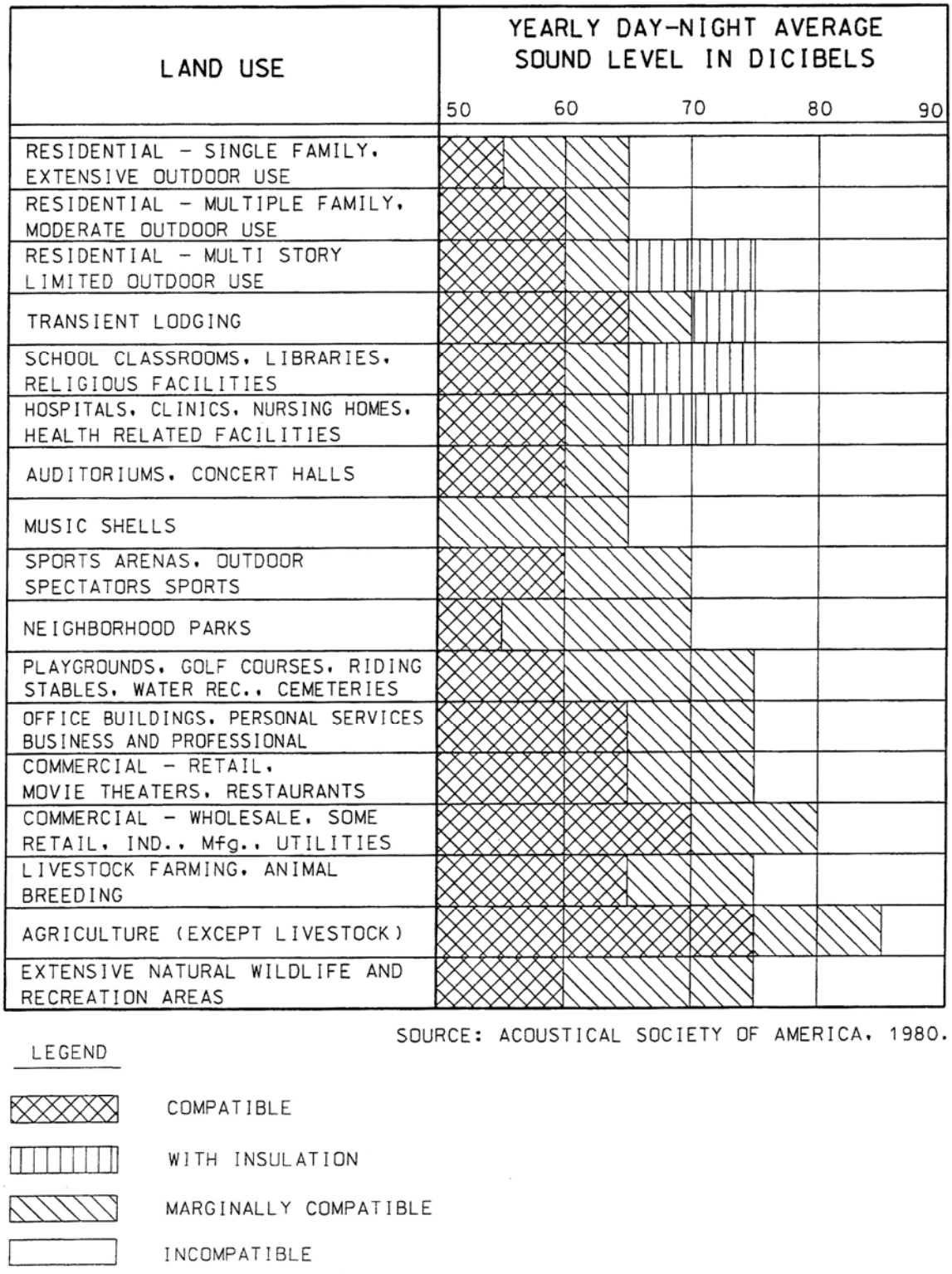
Table 2-3

TYPICAL SOUND LEVELS ENCOUNTERED IN COMMON ACTIVITIES

Jet Takeoff (200 feet)	120 dBL	Intolerable
Shout (5 feet)	100 dBL	Very noisy
Urban Street	80 dBL	
Automobile Interior	70 dBL	Noisy
Normal Conversation (3 feet)	60 dBL	
Office, Classroom	50 dBL	Moderate
Living Room	40 dBL	
Bedroom at Night	30 dBL	Quiet
Rustling Leaves	10 dBL	Barely audible

Source: The Science of Sound, Thomas D. Rossing, 1990.

Table 2-4


LAND USE
YEARLY DAY-NIGHT AVERAGE SOUND LEVEL IN DICIBELS
50
60
70
80
90
RESIDENTIAL - SINGLE FAMILY, EXTENSIVE OUTDOOR USE
RESIDENTIAL - MULTIPLE FAMILY, MODERATE OUTDOOR USE
RESIDENTIAL - MULTI STORY LIMITED OUTDOOR USE
TRANSIENT LODGING
SCHOOL CLASSROOMS, LIBRARIES, RELIGIOUS FACILITIES
HOSPITALS, CLINICS, NURSING HOMES, HEALTH RELATED FACILITIES
AUDITORIUMS, CONCERT HALLS
MUSIC SHELLS
SPORTS ARENAS, OUTDOOR SPECTATORS SPORTS
NEIGHBORHOOD PARKS
PLAYGROUNDS, GOLF COURSES, RIDING STABLES, WATER REC., CEMETERIES
OFFICE BUILDINGS, PERSONAL SERVICES BUSINESS AND PROFESSIONAL
COMMERCIAL - RETAIL, MOVIE THEATERS, RESTAURANTS
COMMERCIAL - WHOLESALE, SOME RETAIL, IND., Mfg., UTILITIES
LIVESTOCK FARMING, ANIMAL BREEDING
AGRICULTURE (EXCEPT LIVESTOCK)
EXTENSIVE NATURAL WILDLIFE AND RECREATION AREAS
SOURCE: ACOUSTICAL SOCIETY OF AMERICA, 1980.
LEGEND
COMPATIBLE
WITH INSULATION
MARGINALLY COMPATIBLE
INCOMPATIBLE

Since construction equipment noise levels decrease at a rate of approximately 6 dBA per doubling of distance, at 30 m (100 feet) the noise levels would be about 6 dBA less than the levels shown at 15 m (50 feet). Similarly, at 60 m (200 feet) the noise levels would be 12 dBA less than shown. Intervening structures or topography can act

2.1.11 Long-Term Operational Impacts

Alternatives 1-2:

As for long-term impacts following construction, road operations are expected to generate little noise in comparison to the ambient noise currently generated by Kalanianaole Highway. There will be no loud electrical or mechanical equipment associated with daily operations.

The proposed project will have no noise impacts to the adjacent sensitive receivers; homes in the Pohakupu, Enchanted Lake neighbors, The Women's Community Correction Facility and the Hawaii State Youth Correctional Facility, for the following reasons:

- Traffic speeds on the access road will be between 20 and 30 mph.
- Low traffic volumes on the access road, predicted to be below 400 vph during peak hours.
- The closest sensitive receiver, the Women's Community Correction Facility, is over 200 feet away from the proposed roadway.

Because of the low traffic volumes and speed, the proposed roadway will not raise the existing peak hour noise levels at the adjacent sensitive receivers.

Alternative 3: Akiohala Street will experience slightly increased traffic volumes if a new parking lot is constructed and connected to the current KHS Akiohala drop-off.

Alternatives 4 and 5: Traffic noise would remain the same with the construction of sidewalk improvements in Pohakupu.

Alternative 6: Old Kukanono community would have increased levels of traffic noise if a new road was constructed.

2.1.12 Air Quality

2.1.12.1 Existing Conditions

Alternatives 1-6: Air quality in the Kailua area is predominantly affected by vehicle emissions. Data from the State Department of Health indicate that air quality standards are currently being met; however, carbon monoxide concentrations occasionally exceed the standards near traffic-congested areas.

2.1.12.2 Short-Term Construction Impacts

Alternatives 1-6:

During construction, short-term impacts may be expected from fugitive dust and exhaust emissions from construction equipment and vehicles.

Dust will be heaviest during excavation, which is expected to take six months, depending on the method of excavation. Trucks and other construction vehicles will also generate dust. The dust problem will decrease once excavation is completed and while the road and other facilities are being constructed.

Adjacent residences and Kailua High School populations will be affected the most by dust emissions during the construction period.

2.1.12.3 Long-Term Operational Impacts

No long-term air quality impacts are expected from operation of the road and parking lot proposed for Alternatives 1 and 2, the parking lot for Alternative 3, the sidewalks and drainage improvements for Alternatives 4 and 5, and the Old Kukanono Community road proposed for Alternative 6.

2.1.12.4 Potential Mitigations

Alternatives 1-6:

State air pollution control regulations require no visible fugitive dust emissions at the property line. To provide for compliance with these regulations, an effective dust control plan will be implemented. Dust control measures may include watering the work area, using windscreens, keeping adjacent roads clean, and covering open-

bodied trucks. Other dust control measures may include limiting the area that can be disturbed at any given time and/or mulching or stabilizing inactive areas. Paving and landscaping early in the construction schedule could also reduce fugitive dust. Exhaust emissions could be mitigated by inspecting construction vehicles and moving construction equipment and workers during off-peak traffic hours.

Construction dust may impact classroom activities. As much work as possible should be done during the summer months to mitigate the impacts from dust. Dust screens may also be constructed. Traffic generated by construction vehicles should not significantly affect the school's air quality.

The contractor will be required to comply with the provisions of Chapter 60, "Air Pollution Control," of Title 11, Administrative Rules of the State Department of Health. In addition, the contractor will be required to implement measures to minimize air quality degradation. Specific project mitigation measures will be identified in the specifications for each construction contract.

If dust levels exceed the Department of Health's air quality standards and affect classroom activities, mitigation may be appropriate.

2.1.13 Hazardous Waste Materials

A Phase 1 Environmental Site Assessment (Appendix D) was performed by the consultant, Environmental Planning Solutions (EPS). Subsurface or chemical analyses of soil or groundwater were not conducted as part of the evaluation. The assessment did include a site reconnaissance to observe existing conditions, in addition to a review of available local, state, and federal records. No evidence of recognized adverse environmental conditions related to hazardous waste materials was found on the property for Alternatives 1-3. Alternatives 4-6 were not evaluated for the presence of hazardous materials because they are located in residential neighborhoods.

2.1.13.1 Existing Conditions

Alternatives 1-3: The project area for the proposed access road and/or parking lot was assessed in order to determine the possible presence of hazardous materials. An older

irrigation pipeline shown to traverse the project area could contain residue from historic pumping operations that transported water from Kawainui Marsh to Waimanalo sugarcane fields, but it is unlikely any such residue would pose a threat, due to the fact that the water pumped from Kawainui Marsh was organic, nutrient-rich freshwater. Based on the available information reviewed, EPS concluded that the project property has no potentially significant environmental concerns; therefore, no further environmental evaluation of the potential presence of hazardous materials was recommended.

Alternatives 4 and 5: Sidewalk and drainage improvements on Ulupii Street and Ulumanu Drive are located in residential communities; therefore, no assessment of hazardous waste materials was performed. Alternative 6

Alternative 6: The Makai Old Kukanono Access Road is in a residential community and was not assessed for the presence of hazardous waste materials.

2.1.13.2 Probable Impacts

2.1.13.2.1 Short-Term Construction Impacts

Alternatives 1-6: No short-term construction impacts are anticipated.

2.1.13.2.2 Long-Term Operational Impacts

Alternatives 1-3: The proposed roadways and parking lots for Alternatives 1-3 are not likely to generate substantial amounts of non-point source pollution runoff from the use of approximately 208 and 394 (Alternatives 1 and 2 respectively) vehicles trips per day, or at least 28 for Alternative 3; therefore, they do not pose the potential for hazardous waste impacts. Illegal dumping of hazardous materials could result from use of the proposed Alternative 1 or 2 road.

Alternatives 4-6: Alternatives 4-6 do not pose the potential to exacerbate the presence of hazardous waste materials in residential communities where few are likely to exist.

2.2 SOCIOECONOMICS AND COMMUNITY

2.2.1 Population and Demographics

2.2.1.1 Existing Conditions

Alternatives 1-6: In 1995, the population in the Ko'olaupoko District was 121,990 (State of Hawaii Data Book, 1998). As of the 2000 Census, the Kailua Census Designated Place (CDP) the population was 36,513 people, with 12,229 households and 9,318 families residing in the CDP. Of the 12,229 households, 32.1% had children under the age of 18 living with them, 59.2% were married couples living together, 12.2% had a female householder with no husband present, and 23.8% were non-families. The population density was 2,123.2/km^2 (5,495.8/mi^2). The racial makeup of the CDP was 43.84% White, 0.76% Black or African American, 0.30% Native American, 21.11% Asian, 8.07% Pacific Islander, 0.93% from other races, and 24.99% from two or more races.

Six percent of the households have someone living alone who is 65 years of age or older, and the average household size was 2.98 and the average family size was 3.33.In the CDP, the population was spread out with 24.1% under the age of 18, 7.2% from 18 to 24, 28.6% from 25 to 44, 26.3% from 45 to 64, and 13.7% who were 65 years of age or older. The median age was 39 years.

2.2.1.2 Probable Impacts

2.2.1.2.1 Short-Term Construction Impacts

No short-term construction impacts to population or demographic distributions are anticipated.

2.2.1.2.2 Long-Term Operational Impacts

While the proposed project will improve the existing substandard transportation access problem in Pohakupu, it is not likely to contribute to any significant increase in the residential population or change in demographic distributions as a result of improved traffic conditions and the minor economic impact realized by project construction and implementation.

2.2.2 Economics

2.2.2.1 Existing Conditions

Alternatives 1-6:

Year 2000 census track data shows that a sample from Kailua indicates a median household income of $59,194, compared to $86,740 for neighboring Maunawili-Kawainui, $81,665 for Olomana, $83,725 for Enchanted Lake, $84,422 for Keolu Hills, and $48560 for Waimanalo; compared to the State median household income of $49, 820 (Hawaii State Data Center Report 200-3, 47).

The per capita income for the CDP was $29,299, with 5.4% of the population and 3.3% of families falling below the poverty line. Out of the total population, 5.3% of those under the age of 18 and 1.5% of those 65 and older were living below the poverty line.

Kailua had a home ownership rate of 70.5 percent, compared to 54.6 percent on the Island of Oahu (2000 Census SF1 File; Planning Division, Honolulu Department of Permitting and Planning, January, 2002).

2.2.2.2 Probable Impacts

2.2.2.2.1 Short-Term Construction-Related Impacts

Alternatives 1-6: While construction of the proposed alternatives will provide additional employment and generate public revenue in the form of increased general excise and income taxes of businesses and workers involved in the project, none of the proposed Alternatives 1-6 are anticipated to create a substantial economic impact upon potentially affected residential or business communities.

2.2.2.2.2 Long-Term Operational Impacts

Alternatives 1-6:

Irreversible and irretrievable economic resources committed to the project include funds, labor, energy, and raw materials required to construct and maintain the proposed facilities. While the proposed project will improve the existing substandard transportation access problem in Pohakupu, it is not likely to contribute to any

significant increase in income as a result of improved traffic conditions and the minor economic impact realized by project construction and implementation.

Increased traffic in the vicinity of the Alternative 4 Ulumanu Drive sidewalk improvements could create a positive benefit for businesses in the strip mall located one block away, approximately 0.10-mile, on the corner of Uluoa Drive and Kailua Road, but the impact is likely to be negligible.

2.2.3 Neighborhood Character

2.2.3.1 Existing Conditions

Kailua means "two seas," a contraction of the words kai (meaning sea water) and elua (meaning two); it is so named because of the two lagoons that were once found in the district, which cultural and natural eutrophication (aging) processes have transformed into the present day inland freshwater bodies of Kawainui Marsh and Kaelepulu Pond. As of the 2000 Census, the Kailua Census Designated Place (CDP) had a total population of 36,513, approximately as large as nearby Kāneohe (34,970) and the second largest town in the State of Hawaii, with only the Honolulu Primary Urban Center (PUC) being significantly larger. Kailua is primarily a residential community, with a centralized commercial district along Kailua Road and in Kailua Town. Nearby towns and communities include Kāneohe, Maunawili, Olomana, Enchanted Lake, Keolu Hills, Kailua Heights, and Waimanalo.

The total area of Kailua is 30% water, with a significant portion of this water area covered by Kawainui Marsh, the largest wetland in the Hawaiian Islands and a nominated Ramsar Convention site, thereby designating it a potential wetland of international importance.

Kailua is a suburban residential community with supporting retail services that provide employment to local residents. Population and housing have grown slowly due to a lack of land available for development and the City's General Plan directing growth to Leeward Oahu.

Many of the residents in the Kailua area are characterized as long-time Hawaii residents with generally higher education, more professional occupations, higher median income, and a high percentage of residents are homeowners.

The proposed project will not affect the character of the larger Kailua community.

2.2.3.1.1 Pohakupu

Climactically, Pohakupu has an annual rainfall of about 50 inches and the mean annual temperature is about 73 degrees Fahrenheit, making the weather mild and comfortable.

The generally quiet community of Pohakupu has been trying to obtain an additional road to Kailua High School for approximately 25 years to improve quality of life issues relating to traffic in the neighborhood and serious accidents that have occurred as a result of the narrow roads and their lack of sidewalks. An Intermediate School was originally planned for the KHS site, but in 1954--a few years prior to Pohakupu's development in 1959--Kailua High School (KHS) settled-in instead, and with it, student populations of as many as 3000 by the early 1970s, forcing a modular schedule of varying days and times for student attendance. The opening of Kalaheo High School in the mid-1970s caused KHS student enrollment to plummet to approximately one-third (1000) of its previous maximum (3000); nevertheless, Pohakupu's roadways continue to be used inappropriately due to excessive volume generated by Kailua High School's traffic. Unlike other places (e.g. California), Hawaii does not have standards by which to reference and correct such misuse, but the absence of standards does not negate the issue of excessive travel on streets designed for neighborhood use. Additionally, high schools generally have sufficient traffic to justify an arterial access for improved safety and traffic flow. No direct access (dedicated driveway) presently exists from arterials Kailua Road or Kalanianaole Highway to Kailua High School. The primary issue within the Pohakupu neighborhood relates to the use of neighborhood streets as primary access to a major community facility. This impacts quality of life as well as pedestrian safety within the neighborhood. Proposed project alternatives that reduce the amount of KHS-related traffic passing through the Pohakupu neighborhood address both these issues.

Alternatives 1-2: A portion of the project area for Alternatives 1 and 2 is designated as Preservation District, with the intent to preserve and manage major open space and recreation lands of scenic and other natural resource value. Within this P-1 Restricted Preservation District, all uses, structures, and development standards are governed by the appropriate State agencies.

Alternatives 4 and 5: Pohakupu is a quiet residential subdivision in the vicinity of Kailua High School with no sidewalks, a few dirt or asphalt pedestrian footpaths, and little traffic outside of peak school drop-off and pick-up hours. Lack of pedestrian safety and traffic congestion are issues because they are normally incompatible with this community's character and are only experienced within the context of KHS operations.

Alternative 6: Old Kukanono Community is a residential area zoned "Country." The Country District provides for areas with limited potential for agricultural activities, but for which open space and/or the rural character is desired. Basic public services and facilities to support the district are permitted in lands designated Country.

2.2.3.2 Probable Impacts

Alternatives 1 and 2: Building an additional access road will provide improved safety and security for residents and students in emergency situations to KHS--a designated shelter (hurricanes, homeland security, etc.). An anticipated reduction in traffic volume in Pohakupu residential areas provides an added level of improved safety for pedestrians. Alternatives 1 and 2 will additionally provide for a reduction of commuter-related noise in existing residential areas due to an expected reduction in traffic volume as a result of utilization of an alternative route. Improved travel efficiency for students coming from Waimanalo is also expected to result from implementation of alternatives 1 and 2, a new road from Kalanianaole Highway. Scoping comments from residents of the Pohakupu community indicated that Alternatives 1 and 2 would provide many residents of Pohakupu relief from the excessive traffic in the area during sporting events. A 2005 meeting of the Pohakupu Community association reviewed the two alternatives for the turn-off of Kalanianaole Highway and an informal consensus was reached that determined the route for Alternatives 1 and 2 would cause the least delay and stress on commuters. A new roadway is generally considered compatible with the

preservation of open space, which is called-for by this alternative's "Country" zoning designation.

Alternative 3: This alternative will provide a much smaller reduction of commuter-related noise in existing residential areas than alternatives 1,2 and 6, due to less expected reduction in traffic volume as a result of an alternative route stemming from construction of a new parking lot. Levels of safety in Pohakupu are likely to be only marginally impacted by implementation of this alternative, as only slightly fewer cars are likely to use Pohakupu streets.

Alternatives 4 and 5: New sidewalks will provide improved levels of safety on Ulumanu and Ulupii Streets, but they will do little to improve the existing volume of traffic currently experienced.

Alternative 6: Building an additional access road through Old Kukanono will provide improved safety and security for residents and students in emergency situations as KHS is a designated shelter (hurricanes, homeland security, etc.). An anticipated reduction in traffic volume in Pohakupu residential areas also adds another level of improved safety for pedestrians there. Alternative 6 will additionally provide for a reduction of commuter-related noise in existing residential areas due to an expected reduction in traffic volume as a result of utilization of an alternative route. Improved travel efficiency for students coming from Coconut Grove and Kailua Town is also expected to result from implementation of Alternative 6, a new road from Kailua Road to KHS. A new roadway is generally considered compatible with the preservation of open space, which is called-for by this alternative's "Country" zoning designation.

2.2.4 Community Relations

2.2.4.1 Existing Conditions

In order to establish the project-related issues the community perceives to be important, the project has endeavored to coordinate with community stakeholders, including Kailua High School (KHS) , the Women's Community Correctional Center (WCCC), Kailua Neighborhood Board #31, the Pohakupu Community Association,

members of the KHS Additional Access Task Force not previously mentioned, and other community and government stakeholders. Further details about the particular issues covered at those meetings are provided in Section 5.2.

Concerns expressed by members of the Pohakupu neighborhood include problems caused by high school traffic on narrow, un-curbed streets including: speeding cars killing pets; increased crime; pedestrian safety for elementary school students walking to Maunawili Elementary School; automobiles ignoring the stop signs; boom boxes in the vehicles turned up to annoying levels; littering; occasional inconvenience and noise from sporting events, graduation, and other events; and KHS-bound heavy delivery trucks making noise. The Pohakupu community is one of only a few neighborhoods that provides access to a high school via community roads, and that there are many elderly residents, parents strolling babies, and elementary school children walking these roads and dodging high school traffic. Speeding high school students have seriously injured children over the years, and there is a dangerous mix of elementary school children walking to Maunawili Elementary School and driving KHS-bound students that is not compatible.

Pohakupu residents have additionally commented that Illegal turns (left or right) onto Ulupii Street to avoid the Castle junction affects community relations between the students and the local residents; therefore, more enforcement and safety precautions are needed. Residents have expressed the observation that the illegal turn is the only viable option for the high school students, and that the alternative of moving slowly with traffic to Kailua Road and then down to Ulumanu Drive is neither practical nor logical. Additionally, the option of commuting to school much earlier to avoid the rush may not be a realistic expectation.

2.2.4.2 Probable Impacts

Alternatives 1 and 2: With the exception of unresolved issues from KHS and WCCC (see section 1.6), the proposed project Alternatives 1 and 2 are supported by the community of Pohakupu, Waimanalo and Kailua Neighborhood Boards, the Olomana Community Association, elected officials, and residents from the community at large. Project support is based primarily on

the presumed beneficial impacts of decreased traffic, pedestrian safety and provision of an additional route to access Kailua High School. The WCCC is concerned about road maintenance and security issues involving the close proximity of the fence to their corrections facility. The DOE and KHS have concerns surrounding possible alterations to campus access and security with the proposed access road. However, due to the need for overflow parking for campus events, they favor the beneficial impact of the additional parking lot proposed by Alternatives 1-3. Ownership, maintenance and liability of the road remain important issues likely to result from implementation of Alternatives 1 or 2. The Kailua Neighborhood Board is supportive due to perceived commuting benefits to students from Waimanalo and Kailua communities.

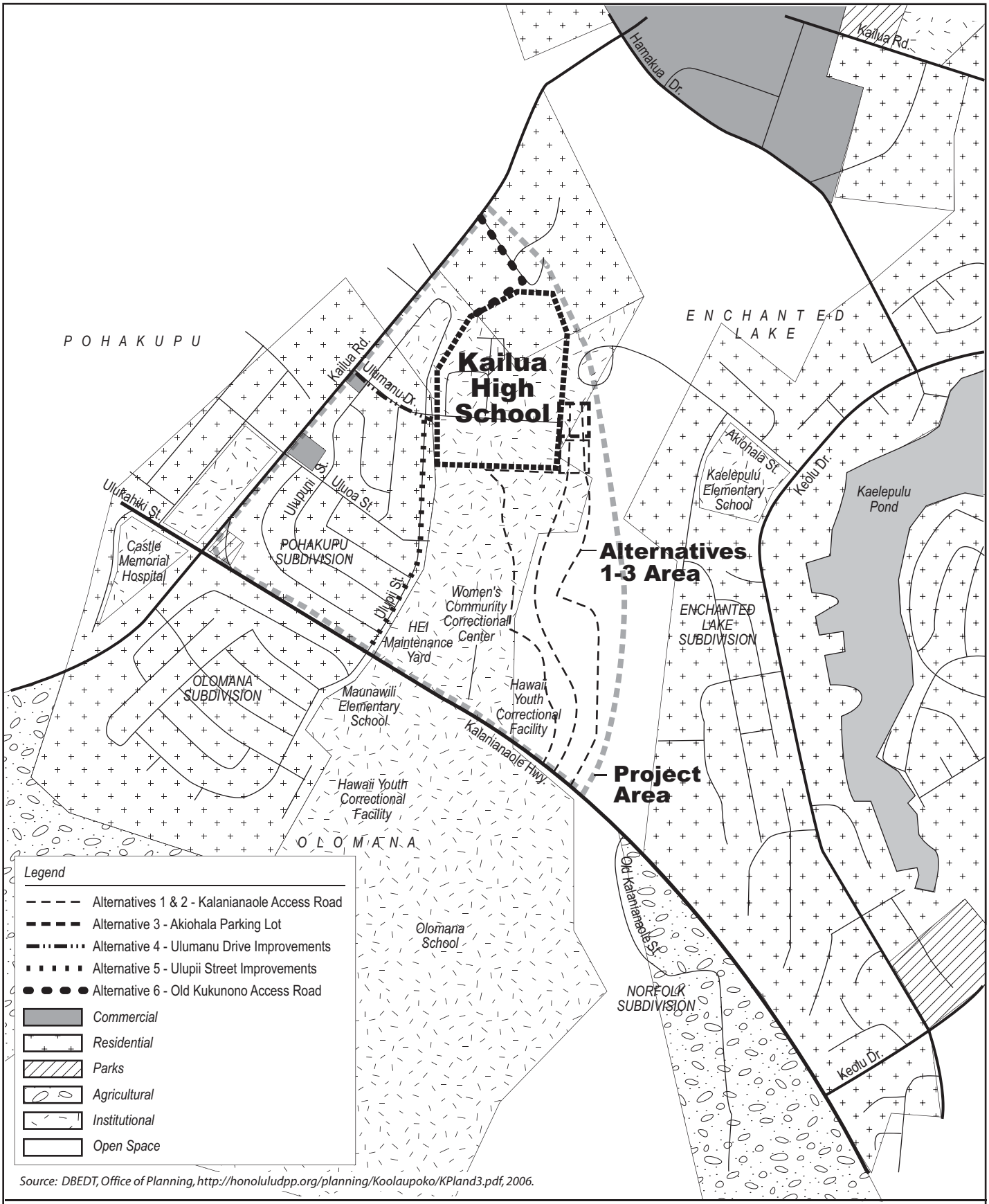
2.2.4.3 Potential Mitigations

The following measures are suggested to help mitigate community concerns by facilitating community relations and communications and keeping area residents and workers informed about project activities:

- Maintain communication throughout the construction period with adjacent residents, neighborhood boards, and community associations.
- Publicize construction activities in the daily newspapers and in newsletters published by neighborhood boards and community associations.
- Maintain a procedure whereby questions, concerns, and complaints about the project will be handled expeditiously.
- Continue to convene Task Force meetings and additional community outreach to stakeholders and concerned members of the potentially affected communities.
- Inform the public about the project's benefits. Project communication facilitated through an outreach strategy should help members of affected communities understand the need for the additional access, and that they are an integral part of the overall Kailua High School transportation network.

2.2.5 PUBLIC SERVICES AND FACILITIES

Public Facilities are indicated on Figure 2-10 and more detailed explanations of facilities and services in the area are found in the sections that follow.



Source: DBEDT, Office of Planning, http://honoluludpp.org/planning/Koolaupoko/KPland3.pdf, 2006.

SCALE:

0 1/8 mi. 1/4 mi.

N

Public Facilities Map

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-10

2.2.5.1 Existing Conditions

2.2.5.1.1 Water Service

Water service to this part of Kailua is primarily being provided by the Pohakupu 272 Reservoirs. Prior to 1986, water service to this area was provided by the Kailua 272 Steel Reservoir, which has been taken out of service.

2.2.5.1.2 Natural Gas

The Gas Company does not have any existing or future plans for underground utility gas mains in the project vicinity.

2.2.5.1.3 Fire Protection

The Kailua Fire Station, at the corner of Ku'ulei Road and Kainalu Drive, is approximately 1.5 miles from the project site. Other nearby fire stations are Olomana Fire Station on Kalanianaole Highway and Aikahi Fire Station at the entrance to Kaneohe Marine Corps Air Station. Ambulance service is also available in back of the Kailua Fire Station.

2.2.5.1.4 Schools

Educational institutions in the vicinity of the site include Kailua High School, Kaelepulu Elementary School, and Kailua Intermediate School.

Kailua High School is 0.25-1.0 mile from all of the proposed alternatives sites.

The 2005-2006 year enrollment for Kailua High School was 972 students, and the population is projected to decrease to 815 in 2011.

2.2.5.1.5 Emergency Services

Kailua High School is a Civil Defense Evacuation site requiring appropriate and safe ingress/egress in the event of an emergency, and during large School events, the Pohakupu subdivision is clogged with vehicular traffic and parked cars that could impede the arrival/departure of emergency vehicles in a crisis.

The scoping process has revealed that some Pohakupu community members were concerned that in the event of an emergency resulting from a natural disaster, Kailua

High School cannot be evacuated in a timely manner, and if the disaster is coastal, and downtown Kailua were to flood (e.g. the storm of Jan 1, 1987), getting to shelter at the high school could be difficult due to its isolated location. Additionally, in the event of a major power outage, a major fire among the wooden homes in Pohakupu, a deliberately set brush fire adjacent to the school, and other unanticipated major and minor catastrophes, the school population could be subject to great harm.

2.2.5.1.6 Bike Plan Hawaii

Bike Plan Hawaii is a tool to integrate bicycling into the State's transportation system. The Plan outlines how the State intends to accommodate and promote bicycling by improving conditions for current bicyclists and encourage new users. It draws on a combination of existing and future bicycle facilities, policies, and programs to ensure a successful bicycle network.

Alternatives 1, 2, and 6: Bike Plan Hawaii Priority 1 proposed bicycle improvements are recommended for near-term implementation, desirable in less than ten years, while Priority 2 proposals are slated for less than 20 years. Priority 1 and 2 improvements exist within the vicinity of the proposed KHS additional access Alternatives 1, 2, and 6: the Kawainui Levee Path (Mokapu Boulevard to Kailua Road) in the vicinity of the rejected Alternative 6 and is slated as a proposed near-term bicycle improvement; and a 2.6-mile Kalanianaole Highway improvement, from Kailua Road to Olomana Golf links is a proposed mid-term improvement that will run adjacent to the proposed road for Alternatives 1 and 2.

2.2.5.3 Probable Impacts

2.2.5.3.1 Adverse Impacts

Alternatives 1-6: No adverse impacts to public facilities are anticipated from implementation of the six alternatives.

During project pre-consultation scoping, the Department of Community Services determined that Alternatives 1 and 2 will not have any impact on affordable and special needs housing, and they will not affect any of the programs and services provided by the Department of Community Services.

2.2.5.3.2 Beneficial Impacts

Alternatives 1 and 2:

The proposed access roads will provide a more direct route to Kailua High School for students from Waimanalo and for some residents of Kailua Heights, decreasing traffic and creating fewer cars on Kalanianiole Highway during peak traffic. Additionally, at a project task force meeting attended by the Honolulu Fire Department (HFD), photographs were circulated that indicated that overflow parking from Kailua High School special events created physical barriers (i.e. cars blocking) to HFD access in the past. The hope is an additional access road and additional parking will help to alleviate this problem. Construction of the alternative road should have a positive impact on fire protection service for Kailua High School by supplying an alternative entrance in order to support firefighting efforts.

Alternatives 1 and 2's proposed creation of a new parking lot would have the beneficial impact of adding to Kailua High School's present parking capacity. Additional parking could help to alleviate potential problems resulting from a lack of adequate emergency vehicle access during, emergencies, disasters, and large KHS events.

Alternative 3: Creation of a new parking lot in the vicinity of the existing Akiohala drop-off circle would have the beneficial impact of adding to Kailua High School's present parking capacity. As previously mentioned, overflow parking from Kailua High School special events has created physical barriers (i.e. cars blocking) to HFD access in the past, and there is hope that some additional parking could help to alleviate this problem. The drop-off circle area and proposed parking lot and their pedestrian connections will comply with ADA guidelines.

Alternatives 4 and 5: Creating sidewalks on Ulupii Street or Ulumanu Drive would have a beneficial impact on transportation facilities by increasing pedestrian safety and roadway availability for automobile use.

Alternative 6: The Makai Old Kukanono Access Road will provide a direct route to Kailua High School for students from Coconut Grove and Kailua Town, decreasing traffic and creating fewer cars on Kailua Road during peak traffic.

2.2.5.3.3 Americans with Disabilities Act (ADA) Compliance

All facilities will be designed to meet the requirements of the American with Disabilities Act and the requirements of Section 103-50 Hawaii Revised Statutes, and the project will incorporate the best design practices as noted in the U.S. Architectural and Transportation Barriers Compliance Board's "Building a True Community - Final Report - Public Rights-of-Way Access Advisory Committee" published January 10, 2001, and 36 CFR Parts 1190 and 1191 "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Architectural Barriers Act (ABA) Accessibility Guidelines; Final Rule" published July 23, 2004.

2.2.6 Automobile Transportation

A traffic evaluation of alternative accesses for Kailua High School was performed and is included in Appendix E. The report summarizes the results of an evaluation of the need for an additional access to Kailua High School. Investigations regarding physical and operational alternatives and parking issues surrounding special events are also documented in the report. The following is a summary of the traffic evaluation.

2.2.6.1 Introduction

The main access to Kailua High School (KHS) is located so that the majority of school-related traffic must pass through the Pohakupu residential subdivision to and from the school. The Two Pohakupu neighborhood streets most affected by this traffic are Ulumanu Drive and Ulupii Street. During special events at KHS, there is often insufficient parking on campus, and overflow parking also affects the Pohakupu neighborhood.

Residents of Pohakupu subdivision have requested that alternative access options be explored that could eliminate the use of neighborhood streets to access KHS.

This traffic evaluation has two major goals:

1. reduction of school-related traffic in the Pohakupu neighborhood; and

2. reduction of school-related overflow parking in the Pohakupu neighborhood.

In achieving these two goals, the following considerations are important:

- maintain or improve student pedestrian safety; and
- maintain or improve peak period intersection operations at key school-related intersections.

Seven alternatives were considered to help alleviate traffic in the Pohakupu neighborhood as well as to increase pedestrian safety along Pohakupu streets: Alternative 1 – New Access Road and Student Parking Lot; Alternative 2 – New Access Road and Student Parking Lot with Ulumanu Restriction; Alternative 3 – New Student Parking Lot off Akiohala Street Access; Alternative 4 – Ulumanu Drive Pedestrian Improvements; Alternative 5 – Ulupii Street Pedestrian Improvements; Alternative 6 – Makai "Old Kukanono" Access Road; and Alternative 7 – No Build. Alternative 6 was screened out due to environmental constraints and is not part of this evaluation.

2.2.6.2 Existing Roadway Network

Currently there are two accesses to Kailua High School: the main entrance at the intersection of Ulumanu Drive and Ulupii Street and a drop-off only access via Akiohala Street. The main Ulumanu access is utilized by 65 to 70 percent of the school-related traffic during the peak periods.

The roadways in the vicinity of Kailua High School are Kalanianaole Highway, Kailua Road, Keolu Drive, Akiohala Street, Ulupii Street, Ulumanu Drive, and Old Kalanianaole Road. The following intersections were included in the study:

- Ulumanu Drive and Ulupii Street
- Ulumanu Drive and Kailua Road
- Kalanianaole Highway and Ulupii Street
- Kalanianaole Highway and Old Kalanianaole Road
- Keolu Drive and Akiohala Street

The existing and alternative traffic volumes at each of these intersections were analyzed using Highway Capacity Software (HCS), based on methodologies in the 2000 Highway Capacity Manual.

2.2.6.3 Alternatives Analysis

2.2.6.3.1 Alternative 1- New Access Road and Student Parking Lot

This alternative provides an additional access road for student drop-offs and students that drive and park at KHS. The new access road would usually only have access to the drop off area and a new parking lot and will not provide vehicular access into the campus under normal operation. It removes 208 vehicles from the Pohakupu neighborhood during the AM peak hour. Faculty, staff, student drop-offs, student parkers, and deliveries will be able to continue using the existing Ulumanu access.

The westbound left-turn at Ulupii Street/Kalanianaole Highway experienced the least delay during the AM peak compared to the other alternatives, as shown in Table 3. The HCS modeling also indicated that the westbound left-turn out of the new access road would experience slightly lower delay than in Alternative 2. The northbound left-turn turning out of Ulumanu Drive onto Kailua Road experienced higher delays than Alternative 2, but lower than the other alternatives.

Reduced traffic volume during peak school access hours result in lower exposure for student pedestrians, thereby improving pedestrian safety.

An advantage of this alternative during special events is a new parking lot located at the south end of Kailua High School (KHS) near the baseball field. This new parking lot coupled with special access to the greater school grounds is projected to reduce the amount of overflow parking that currently affects the Pohakupu neighborhood during special events.

2.2.6.3.2 Alternative 2- New Access Road and Student Parking Lot With Ulumanu Access Restrictions

This alternative redirects all student drop-offs and student drivers (that intend to park) from the Ulumanu access to the proposed new access road; therefore, it removes the greatest amount of vehicles from the Pohakupu neighborhood than any of the alternatives. Approximately 394 vehicles per hour are removed from the Pohakupu neighborhood during the AM peak period. Faculty, staff, and deliveries will continue to use the existing Ulumanu access.

The northbound left-turn from Ulumanu Drive onto Kailua Road experienced the least delay compared to the other alternatives. During the PM peak, the westbound left-turn from Ulupii Street onto Kalanianaole Highway operated with less delay than all other alternatives. Traffic from Kailua Road was assumed to reroute through the already congested intersection of Kalanianaole Highway and Kailua Road instead of turning at Ulumanu Drive. The amount of traffic rerouted is not of sufficient magnitude to significantly change the level of delay at this intersection, but would increase delay for vehicles destined for Kailua High School. Traffic destined for Kailua High School from Waimanalo would experience slightly less delay due to a shorter route. Traffic rerouted through the Enchanted Lake area is low in magnitude and is not projected to result in changes in operation.

2.2.6.3.3 Alternative 3 – New Student Parking Lot off Akiohala Street Access

This alternative is not projected to have a major impact on existing traffic patterns and, therefore, traffic in the Pohakupu neighborhood. Akiohala Street is currently a drop-off only access to KHS. Providing a parking lot accessible by Akiohala Street allows students that drive to school to access KHS from Akiohala Street. Based on the travel patterns identified through the intercept surveys, only 28 vehicles per hour (vph) would be likely to redirect from the Ulumanu access to the Akiohala access.

Intersection operations are projected to be similar to Alternatives 4, 5, and 7 but lower than Alternatives 1 and 2.

Because only 28 vph are projected to be redirected and no pedestrian improvements are proposed as part of this alternative, student pedestrian safety was deemed unchanged from the existing condition.

The Ulumanu access will continue to be the main access in this alternative, although the new parking lot is projected to reduce the potential for overflow parking in the Pohakupu neighborhood.

2.2.6.3.4 Alternative 4 – Ulumanu Drive Pedestrian Improvements

The main feature of Alternative 4 is the addition of sidewalks or footpaths to Ulumanu Drive to formalize the off-street pedestrian path, thereby encouraging pedestrians to

utilize it instead of walking in the street. Therefore, it affects vehicular access patterns very little and would have negligible effect on removing school traffic from the Pohakupu neighborhood.

Intersection operations are projected to be similar to Alternatives 3, 5, and 7 but lower than Alternatives 1 and 2.

The pedestrian facilities on Ulumanu Drive enhance pedestrian safety from a physical separation perspective. Therefore, it is judged that overall pedestrian safety is positive when compared to the existing condition, but less positive than Alternative 1 or 2.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

2.2.6.3.5 Alternative 5 – Ulupii Street Pedestrian Improvements

Pedestrian facilities are also proposed for this alternative but are recommended on Ulupii Street instead of Ulumanu Drive. Because the added pedestrian facilities would provide an enhanced path for students and other pedestrians, the current prohibition on right-turns from Kalanianaole Highway to Ulupii Street during the morning peak period was removed in this alternative. Removing this prohibition is projected to add about 90 vehicles per hour onto Ulupii Street during the morning peak period. The overall number of KHS-related vehicles within Pohakupu would not change from the existing condition.

Intersection operations are projected to be similar to Alternatives 3, 4, and 7 but lower than Alternatives 1 and 2.

Although the pedestrian facilities on Ulupii Street enhance pedestrian safety from a physical separation perspective, the increased vehicular exposure caused by the removal of the existing right-turn prohibition during the morning peak period decrease pedestrian safety. Therefore, it is judged that overall pedestrian safety is neutral when compared to the existing condition.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

2.2.6.3.6 Alternative 7 – No Build

The No Build Alternative will be very similar to the existing condition and to Alternative 3. School vehicular access and parking will be unchanged, including the right-turn prohibition from Kalanianaole Highway to Ulupii Street during the morning peak period. As in Alternative 4, enforcement of the prohibition will be increased.

Intersection operations are projected to be similar to Alternatives 3, 4, and 5 but lower than Alternatives 1 and 2.

No additional pedestrian improvements are proposed as part of this alternative, and student pedestrian safety was deemed unchanged from the existing condition.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

2.2.6.4 Summary of Alternatives Analysis

Table 1 is a matrix that compares key features of the alternatives to summarize the evaluation. As shown, Alternatives 1 and 2 achieve the goals and considerations set for alternative access to Kailua High School (KHS). Both alternatives would remove a large number of vehicles from the Pohakupu neighborhood, they would have the best projected intersection operations, and it would likely reduce overflow parking within the Pohakupu neighborhood during special events at KHS. Alternative 2 would remove almost twice as many vehicles per hour from the Pohakupu neighborhood than Alternative 1 (394 vph versus 208 vph). It would, therefore, reduce pedestrian-vehicular exposure the most thereby having the greatest pedestrian safety and neighborhood livability benefits.

However, State of Hawaii Department of Education headquarters and Kailua High School staff have opposed restrictions at the Ulumanu Drive access on the basis that it would cause operational difficulties for the school. Therefore, Alternative 1 was

selected as the recommended alternative. Alternative 1 does significantly reduce school-related vehicles traveling through the Pohakupu neighborhood, thereby increasing pedestrian safety, neighborhood livability, and selected intersection operations. By providing a new parking lot in the vicinity of the athletic fields, it also reduces the potential for spillover parking into the Pohakupu neighborhood during special events at Kailua High School.

Table 2-5

Summary Evaluation Matrix

	Primary Goals		Other Considerations	
Alternative	Traffic Removed from Pohakupu	Special Event Parking Impacts	Pedestrian/ Vehicle Conflict	Peak Hour Intersection Operations
1 New Access Road and Student Parking Lot	208 vph	+	+	+
2 New Access Road and Student Parking Lot (with Ulumanu restriction)	394 vph	+	+	+
3 Akiohala Parking Lot	28 vph	+	0	0
4 Ulumanu Pedestrian Improvements	0	0	+	0

5 Ulupii Pedestrian Improvements	0	0	0	0
6 Kukanono Access	N/A*	N/A*	N/A*	N/A*
7 No Build	0	0	0	0

Note: "+" = Benefit, "0" = Neutral, "-" = Disbenefit, when compare to existing condition.

vph=vehicles per hour

* N/A= not applicable, alternative eliminated due to environmental impacts

Recommended Alternative

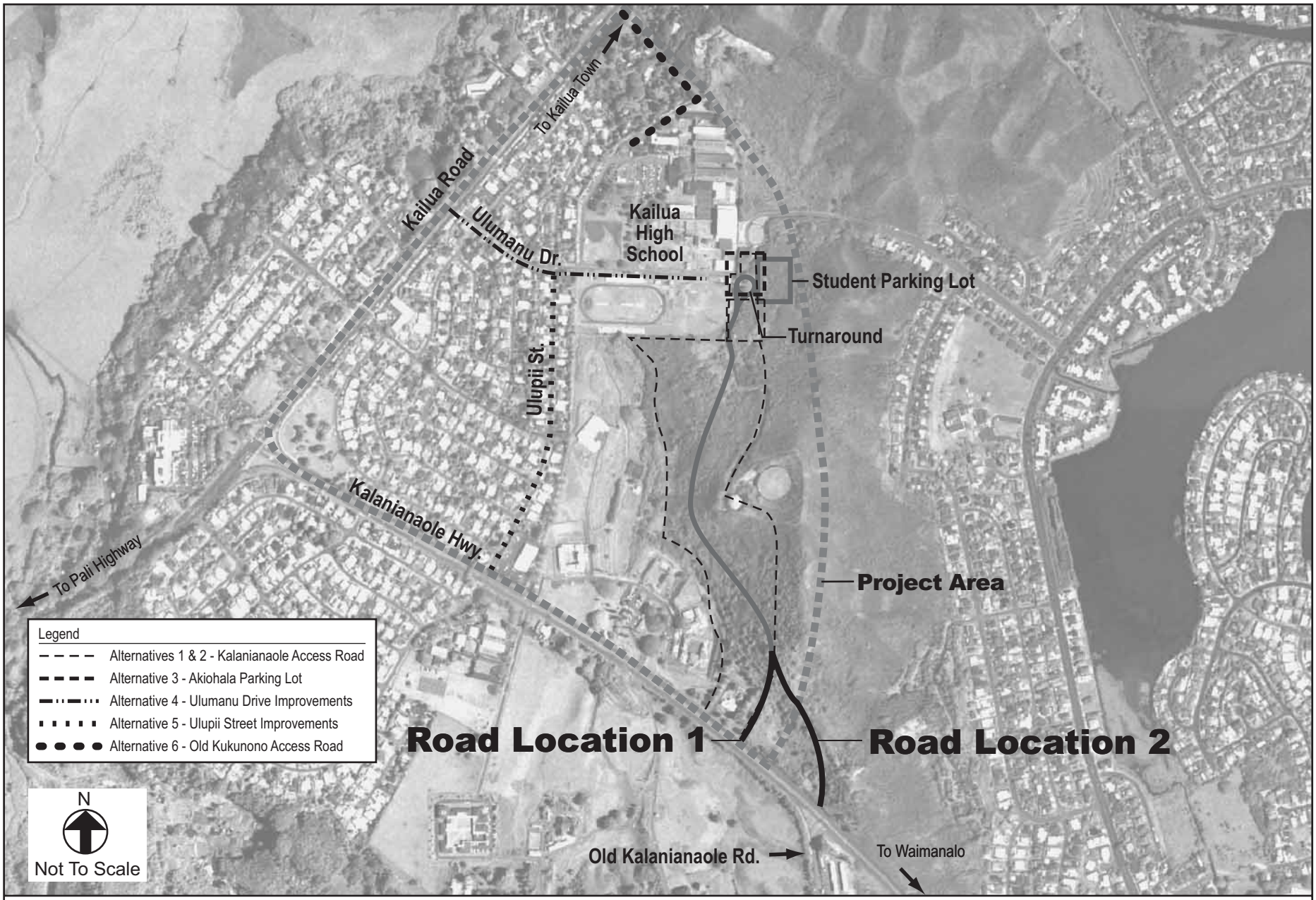
2.2.6.5 Recommended Alternative

Based on the evaluation of alternatives, the recommended alternative is Alternative 1 – New Access Road and Student Parking Lot. This alternative is projected to significantly decrease traffic in the Pohakupu neighborhood during the peak school traffic periods and reduce the potential for overflow parking in the Pohakupu neighborhood during special events at Kailua High School. It is also projected to create a safer environment for pedestrians within the Pohakupu subdivision and improve the intersection operations for selected traffic movements. Although Alternative 2 – New Access Road and Student Parking Lot with Ulumanu Access Restrictions would result in almost twice as much traffic being removed from Pokakupu neighborhood, it requires restricted operation of the Ulumanu Drive access which has been deemed an operational difficulty by Kailua High School staff.

The exact alignment of the proposed new access road is currently being developed. The State of Hawaii Department of Public Safety (PSD) has established a list of design requirements and security concerns that will be addressed during design of the roadway.

There are two intersection location alternatives considered for the proposed access road: connecting to Kalanianaole Highway as a "T"-intersection at approximately STA 39+50, just south of the HSYCF and WCCF, or connecting to Kalanianaole Highway opposite the existing Old Kalanianaole Road. Figure 2-11 illustrates these two alternatives.

Sight distance and intersection operation analyses were performed to determine the recommended location. Tables 2-6 and 2-7 summarize the intersection sight distance analysis results. Table 2-8 summarizes the peak hour intersection operation analyses.



Access Road Intersection Location Alternatives

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-11

Both location alternatives have adequate sight distance available, but the new T-intersection provides longer sight distance which is desirable from a safety perspective, since the proposed access road will be utilized by school buses.

The new T-intersection allows for the installation of a median refuge area for vehicles turning left out of the proposed access road onto southbound Kalanianaole Highway. This is a safer maneuver since a turning vehicle is able to deal with each direction of traffic on Kalanianaole Highway separately. For these reasons, the intersection location that proposes a new T-intersection is recommended.

It was recommended that the proposed access road have a drop-off circle at the south end of the Kailua High School campus. A new parking lot for student parking would be constructed near the drop-off circle as part of the recommended alternative. During special events, this parking could be used for overflow parking for special events such as graduation or athletic events. An access would be provided from the drop-off circle into the campus for use only during special events. Normally, this access would be gated.

2.2.6.6 Conclusion

This traffic evaluation study recommends that Alternative 1 – New Access Road and Student Parking Lot be selected to provide additional access to Kailua High School. This alternative is projected to significantly decrease traffic in the Pohakupu neighborhood during the peak school traffic periods and reduce the potential for overflow parking in the Pohakupu neighborhood during special events at Kailua High School. It will accomplish these goals while creating a safer environment for pedestrians walking within the Pohakupu subdivision and improving the intersection operations for selected traffic movements. It is only one of two alternatives that address both goals stated at the outset of the study as being important factors to consider for the additional access.

Table 2-6
Intersection Sight Distance Evaluation
Northbound Kalanianaole Highway
Left-turn Out of Proposed Access Road

Intersection Location	Type of Design Vehicle			
	Passenger Car		SU Vehicle (Truck or Bus)	
	Required	Available	Required	Available
Old Kalanianaole	590	625	750	800
New T-Intersection	590	700	750	850

Note: All sight distances are in feet. Design speed = 50 mph.

Table 2-7
Intersection Sight Distance Evaluation
Southbound Kalanianaole Highway
Left-turn Out of Proposed Access Road

Intersection Location	Type of Design Vehicle			
	Passenger Car		SU Vehicle (Truck or Bus)	
	Required	Available	Required	Available
Old Kalanianaole	700	725	853	950
New T-Intersection	N/A	N/A	N/A	N/A

Note: All sight distances are in feet. Design speed = 50 mph.

N/A = not applicable, median refuge provided to store vehicle.

Table 2-8

Peak Hour Intersection Level of Service

Proposed Access Road Location Alternatives

Traffic Movement	AM Peak Hour				Mid-Afternoon Peak Hour			
	Old Kalanianaole		New T-Intersection		Old Kalanianaole		New T-Intersection	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Access Road Left	F	72.3	C	22.0	E	39.0	C	17.6
Access Road Right	C	17.7	B	12.6	B	13.5	B	11.0
Old Kalanianaole Left	E	42.8	N/A	N/A	D	33.8	N/A	N/A
Old Kalanianaole Right	B	11.0	N/A	N/A	B	12.2	N/A	N/A
Kalanianaole NB Left	A	9.3	N/A	N/A	B	10.3	NA	NA
Kalanianaole SB Left	B	14.6	A	9.6	B	10.2	B	8.5

Note: delay expressed as seconds per vehicle

NB=northbound, SB=southbound, N/A=not applicable (T-intersection)

2.2.7 Land Use Consistency with State and County Plans

2.2.7.1 Land Use Consistency

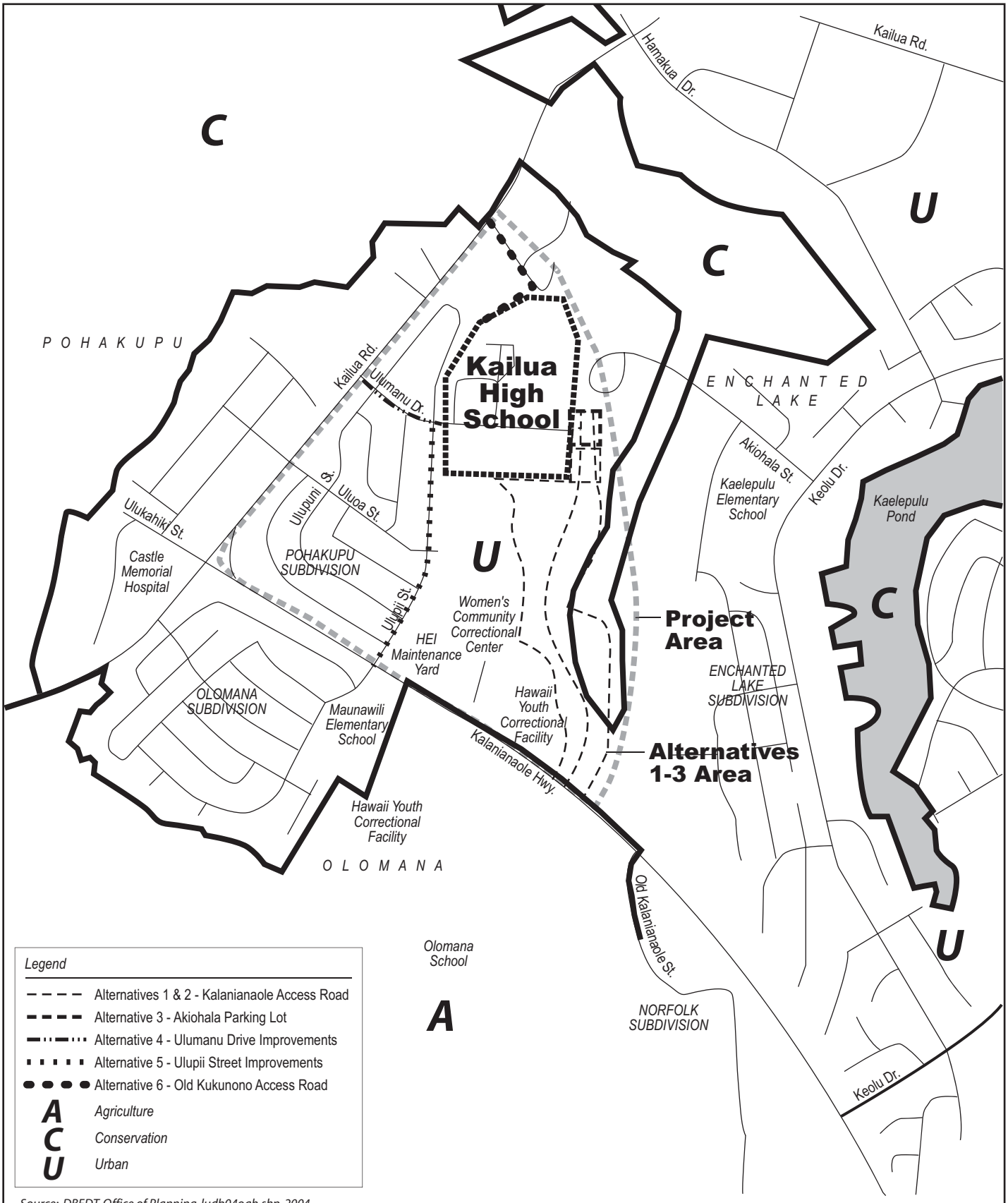
The State Land Use Law (Chapter 205, Hawaii Revised Statutes) was adopted in 1961 and was the first of its kind in the nation, establishing the framework of land use management in Hawaii. All lands in the state are classified into one of four land use districts: Urban, Rural, Agricultural, or Conservation. District boundary amendments may be obtained by petition to the State Land Use Commission (LUC).

Some of the proposed alternatives fall within the Conservation district. The Conservation classification primarily includes lands in existing forests and water reserve zones. It also includes areas necessary for the protection of watersheds and water sources; scenic and historic areas; parks; wilderness; open space; recreational areas; habitats of endemic plants, fish, and wildlife; and all submerged lands seaward of the shoreline. Lands subject to flooding and soil erosion are also included. The Conservation District is controlled by the State Board of Land and Natural Resources, and its uses are governed by the rules of the Department of Land and Natural Resources. A Conservation District Use Application will have to be obtained for this project.

2.2.7.1.1 Existing Conditions

Alternatives 1 and 2: The Alternatives 1 and 2 access road project site may be partially located within the general (G) subzone of the Conservation District (see Figure 2-12), depending upon the final design decision regarding where the road alignment will be located. The objective of this subzone is to designate open space where specific conservation uses may not be defined, but where urban use would be premature. Land uses permitted in the general subzone include those land uses permitted in the protective, limited and resource subzones.

Alternatives 3-6: These alternatives fall under the Urban zoning classification district.



Source: DBEDT, Office of Planning, ludb04oah.shp, 2004.

State Land Use District Boundaries

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-12

2.2.7.1.2 Potential Impacts

Development of the proposed Alternatives 1 and 2 access roads would fall under the following Conservation general (G) subzone permitted land uses:

- Landscaping, defined as alternation (including clearing) of plant cover.
- Land use undertaken by the City & County of Honolulu to fulfill a mandated governmental function, activity, or service for public benefit and in accordance with public policy and the purpose of the Conservation District.
- Demolition, removal, or alteration of existing structures, facilities, and equipment.
- Construction of a road is generally considered compatible with the provision of open space.

2.2.7.2 Hawaii State Plan

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes) establishes a system for the planning, coordination, and integration of major State and County activities. Part I of the Plan lists the State's long-range goals, objectives, policies, and priorities. Applicable sections are discussed below. Part II establishes a statewide planning system to coordinate and implement the plan, and Part III establishes priority guidelines to address areas of statewide concern. None of the priority guidelines listed in Part III relate to the proposed project.

2.2.7.2.1 Section 226-4: State Goals

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

Short-Term Construction Impacts

Alternatives 1-6: Measures will be taken to reduce the effects of noise, dust, and traffic associated with construction activities.

Long-Term Operational Impacts

Alternatives 1-3: The access road and parking lot proposed for Alternatives 1-3 will be consistent with the goals of the State. The site will be landscaped to blend with the surrounding natural environment. The Pohakupu community will experience reduced traffic and noise as a result of less KHS-bound automobiles passing through their

neighborhood, enhancing the physical and mental well-being of the neighborhood. Alternative 3 would result in slightly increased traffic and noise passing through Akiohala Drive

Alternatives 4 and 5: Sidewalk improvements on Ulumanu Drive and Ulupii Street would result in increased safety for pedestrians, but the volume of automobile traffic would remain the same.

Alternative 6: This alternative would cause increased traffic and noise through the Old Kukanono community.

(3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life. [L 1978, c 100, pt of §2; am L 1986, c 276, §3].

Short-Term Construction Impacts

Alternatives 1-6: Short-term economic gains will be realized by those companies and individuals involved in the design and construction of any of the alternatives.

Long-Term Operational Impacts

Alternatives 1-6: Alternative 1, 2 and 6 would provide increased levels of safety and physical "well-being" for those students and residents who normally walk down Ulupii Street or Ulumanu Drive , the parking lot proposed in Alternative 3 to a lesser extent, and the sidewalks proposed by Alternatives 4 and 5. Increased physical well-being will be realized because with implementation of the proposed alternatives, people will now use either the new sidewalks, additional access roads, new parking lots, or combinations of the aforementioned options.

2.2.7.2.2 Section 226-11: Objectives and Policies for the Physical Environment--Land-Based, Shoreline, and Marine Resources

(a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.
(2) Effective protection of Hawaii's unique and fragile environmental resources.
(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:
(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
(8) Pursue compatible relationships among activities, facilities, and natural resources.

Long-Term Operational Impacts

Alternatives 1, 2, and 6: Proposed Alternatives 1 and 2 will be compatible with existing activities, facilities, and natural resources. Taking into account the physical attributes of the area when planning and designing facilities 226-11(b)(3), special emphasis on appearance and beautification of the facilities will be given to minimize the visual impact of the access road. Section 2.1.9 of the EA discusses this visual issue in greater detail.

There will be no irreparable environmental damages to biological or natural resources; however, Alternative 6, the access road in Old Kukanono Community, would require condemnation of residential property. Therefore, this alternative could be considered incompatible with the pursuit of compatible relationships among activities and facilities as outlined by 226-11(b)(8). In addition, 226-11(b)(4) requires that to achieve the land-based resources objectives, it is the policy to "Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage." Construction of a road that crosses a intermittently high-volume drainage ditch(Alternative 6) poses flooding and safety risks for proposed road users, downhill residents and landowners, and biological resources in the marsh across Kailua Road.

2.2.7.2.3 Section 226-12: Objectives and Policies for the Physical Environment--Scenic, Natural Beauty, and Historic Resources

(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.
(b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:
(1) Promote the preservation and restoration of significant natural and historic resources.
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Long-Term Operational Impacts

Alternatives 1 and 2: Because of the visually prominent location of the project, special emphasis on appearance and beautification of the facilities will be given to minimize the visual impact of the access road. Section 2.1.9 of the EA discusses this visual issue in greater detail.

2.2.7.2.4 Section 226-13: Objectives and Policies for the Physical Environment--Land, Air, and Water Quality

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.
(2) Greater public awareness and appreciation of Hawaii's environmental resources.
(b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:
(2) Promote the proper management of Hawaii's land and water resources.
(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.
(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

Alternatives 1-6: Adherence to the State's land, air, and water quality objectives will be assured through proper design and construction practices, which will enhance the physical qualities of the affected communities (226-13[b][6]) by taking function and aesthetics into consideration when designing and implementing the proposed alternatives. Best Management Practices (BMP) will be incorporated into construction activities in order to mitigate the potential for any negative environmental consequences that may result from implementation of any of the proposed project alternatives, helping to manage Hawaii's resources (226-13[b][2]) and promote effective measures to achieve desired quality of those resources (226-13[b][3].

Alternatives 1, 2, and 6: The proposed roadway alternatives are consistent with the City and County of Honolulu Land Use Ordinance and Development Plan for the Primary Urban Center. Most high schools are connected directly to an arterial roadway without having to first pass through a residential community; such is not the case with the Pohakupu subdivision and Kailua High School, where the residential community is currently the designated access. The road will allow users to experience a presently

inaccessibly green belt area that would facilitate a greater public awareness and appreciation of Hawaii's environmental resources as (226-13 [a][2]).

2.2.7.2.5 Section 226-14: Objectives and Policies for Facility Systems--In General

(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

(b) To achieve the general facility systems objective, it shall be the policy of this State to:

(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(3) Ensure that required facility systems can be supported within resource capabilities and at reasonable cost to the user.

Alternatives 1-6: Pohakupu's roadways are inappropriately used to some extent, due to excessive traffic volume generated by Kailua High School. High schools generally have sufficient traffic to justify access to an arterial access for improved safety and traffic flow, but no direct arterial access (dedicated driveway) now exists to Kailua High School. An additional access to Kailua High School is proposed in order to correct and alleviate those aforementioned problems. The Department of Accounting and General Services (DAGS), the proposing agency, intends to provide safe, reliable, convenient, and cost-effective access to Kailua High School, and DAGS would like to simultaneously meet community needs with regard to facilitating access to activity centers and residential nodes. Proposed project Alternatives 1-6 will be consistent with State and County plans, especially 226-14(a), "Planning for the States facility systems in general shall be directed towards achievement of the objective of…transportation…that support statewide social…and physical objectives." Public demands and priorities have changed as the Pohakupu and KHS communities have continued to evolve (226-14[b][2]), and the project alternatives seek to address the changing needs and priorities of both communities.

2.2.7.3 STATE FUNCTIONAL PLANS

The primary means of implementing the goals, objectives, and policies of the Hawaii State Plan are set forth in State functional plans. These functional plans delineate the policies and actions that need to be addressed in the short-term in these specific areas: agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, and transportation. They are intended to act in a coordinated fashion with County General Plans and Development Plans but are not to be interpreted as law or as mandatory county or private sector actions.

Each functional plan sets forth the policies, statewide guidelines, and priorities within a specific field of activity, when such activity or program is proposed, administered, or funded by any agency of the State (Section 226-2, Hawaii Revised Statutes). Of the functional plans adopted by the State, the Conservation Lands functional plan was examined to determine its applicability to the proposed project. This plan primarily affects State operations. The proposed project is consistent with the State's goal to assure adequate transportation infrastructure.

2.2.7.4 OAHU GENERAL PLAN

The General Plan for the City and County of Honolulu is a statement of long-range social, economic, environmental, and design objectives for Oahu. It addresses (1) population; (2) economic activity; (3) natural environment; (4) housing; (5) transportation and utilities; (6) energy; (7) physical development and urban design; (8) public safety; (9) health and education; (10) culture and recreation; and (11) government operations and fiscal management.

2.2.7.4.1 Natural Environment

Objective A: To protect and preserve the natural environment.

- *Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*
- *Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water-recharge areas, distinctive land forms, and existing vegetation.*
- *Design surface drainage and flood-control systems in a manner which will help preserve their natural setting.*
- *Protect the natural environment from damaging levels of air, water, and noise pollution.*

Alternatives 1-6: Storm, flood, erosion hazards, drainage, and pollution will be considered in the design. These issues are addressed in Section 2.0.

Objective B: To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.

- *Protect Oahu's scenic views, especially those seen from highly developed and heavily traveled areas.*
- *Locate roads, highways, and other public facilities and utilities in areas where they will least obstruct important views of the mountains and the seas.*

Alternatives 1-6: No highly developed or heavily traveled areas will have their scenic views impacted by the proposed project. Design of Alternatives 1-6 will take into consideration measures to blend the structures with their natural environment. A view analysis is presented in Chapter 2.

2.2.7.4.2 Transportation and Utilities

Objective D: To maintain transportation and utility systems which will help Oahu continue to be a desirable place to live and visit.

- *Give primary emphasis in the capital improvement program to the maintenance and improvement of existing roads and utilities.*
- *Evaluate the social, economic, and environmental impact of additions to the transportation and utility systems before they are constructed.*

Alternatives 1-6: Each of the proposed alternatives will take steps toward meeting Objective D. Social, economic, and environmental impacts of the project are evaluated for each of the proposed Alternatives 1-6in the EA process.

2.2.7.4.3 Physical Development and Urban Design

Objective A: To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well designed, and appropriate for the areas in which they will be located.

- *Plan for the construction of new public facilities and utilities in the various parts of the Island according to the following order of priority: first, in the primary urban center; second, in Ewa; and third, in the urban-fringe and rural areas.*

Objective D: To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.

- *Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve.*

Alternatives 1-6: The project will incorporate aesthetic and functional standards in the design. Mitigation measures to complement the physical character of the proposed Alternatives 1-6 with their environment are addressed in Chapter 2.

Objective E: To promote and enhance the social and physical character of Oahu's older towns and neighborhoods.

- *Provide and maintain roads, public facilities, and utilities without damaging the character of older communities.*

Alternatives 1-5: These alternatives will be constructed in such a way that the character of the surrounding community is not damaged.

Alternative 6: This alternative is incompatible with Objective E because residents will be permanently displaced due to Right-of-Way takings.

2.2.7.4.4 Government Operations and Fiscal Management

Objective A: To promote increased efficiency, effectiveness, and responsiveness in the provision of government services by the City and County of Honolulu.

- *Maintain City and County government services at the level necessary to be effective.*
- *Ensure that government attitudes, actions, and services are sensitive to community needs and concerns.*

Alternatives 1-6: As previously stated, the DAGS is concerned with providing a safe and efficient transportation network for Kailua High School and meeting the needs of the community in terms of safety and access. This project is consistent with these objectives. Alternatives 1, 2, and 6 provide an additional emergency route that might be needed during special events when the entrance is HFD access is blocked and during emergency evacuations to KHS as a designated emergency shelter.

2.2.7.5 City and County of Honolulu Development Plans

The City and County of Honolulu Development Plans (PSD) provides a relatively detailed framework for implementing the Oahu General Plan objectives on an area-wide basis. The desired sequence, pattern, and characteristics of development are set forth in public facilities maps for each development plan area. A total of eight DP areas have been established on Oahu. The DP Ordinances consist of four elements: Common Provisions (applicable for all DP regions) and Special Provisions, DP Land Use Maps and DP Public Facilities Maps (for each DP region). The Koolaupoko DP area encompasses the area from Waimanalo to Kualoa.

Part I: Development Plan Special Provisions for Ko'olaupoko

Ko'olaupoko extends from Makapu'u Point to Kaoio Point at the northern end of Kaneohe Bay and is bounded by the Ko'olau mountain range and the sea. Kailua is

described as an "urban-fringe" area. The Special Provisions identify significant open spaces and public views that should be protected whenever possible. In particular, it calls for the preservation of scenic views of ridges, upper valley slopes, shoreline areas from trans-Koolau and coastal highways; from coastal waters looking mauka; and from popular hiking trails that extend toward the Koolau Mountain Range and mauka from Kawainui Marsh.

2.2.7.5.1 Section 24-6.2(a)(1) Open Space.

The visibility, preservation, enhancement and accessibility of open space areas as defined in Section 24-1.4 of the development plan common provisions shall be given high priority in the design of adjacent and nearby developments in Ko'olaupoko.

Alternatives 1-6: Pu'u O Ehu is one of the important places for preservation of open space listed as part of the Vision for Ko`olaupoko's Future. The proposed alternatives' closest locations will be located approximately 1,500 feet from Pu'u O Ehu, the hillside summit overlooking Kailua Town. The Alternatives 1 and 2 access road from Kalanianaole Highway and Alternative 3 will be shielded form surrounding views due to the fact grading will occur well-below the hillside peak. Existing hillside vegetation will be used for landscaping, and other mitigative strategies may be incorporated.

2.2.7.5.2 Section 24-6.2(a)(2) Public View

In order to promote pleasing and attractive living environments and panoramic mauka and makai views from public places, views of major landmarks from public places shall be protected whenever possible.

Alternatives 1-3: The view of Pu'u O Ehu Ridge (Keaniani Ridge from Kaelepulu Pond area is listed as an important view. However, due to the proposed position of the alternatives behind and below Pu'u O Ehu and the hillside summit from Keaniani Ridge to Kalanianaole Highway; the area surrounding Kaelepulu Pond, Keolu Hills, Kailua Heights, and Enchanted Lake will not have a view of any of the proposed Alternatives.

The entire Visual Impact Analysis Report is located in Appendix F.

2.2.7.6 City and County of Honolulu Land Use Ordinance

The Land Use Ordinance (LUO) of the City and County of Honolulu regulates land use in accordance with adopted policies such as the Oahu General Plan and the Development Plans. The LUO provides development and design standards regarding

location, height, size of structure, open spaces, use of structure and land, etc. Article 2 of the LUO establishes zoning districts.

Alternatives 1 and 2: A portion of project Alternatives 1 and 2 are in the area zoned Preservation, Restricted (P-1) and Preservation and General (P-2). Alternatives 1 and 2 also cross areas zoned AG-2 for agriculture, but there are no known past, present, or future agricultural uses. The purpose of the Preservation District is to preserve and manage major open space and recreation lands and lands of scenic and other natural resource value. Within this P-1 Restricted Preservation District, all uses, structures, and development standards shall be governed by the appropriate State agencies.

Alternatives 3-5: Residential (R-5, R-7.5) zoning is designated for Alternative 3-5.

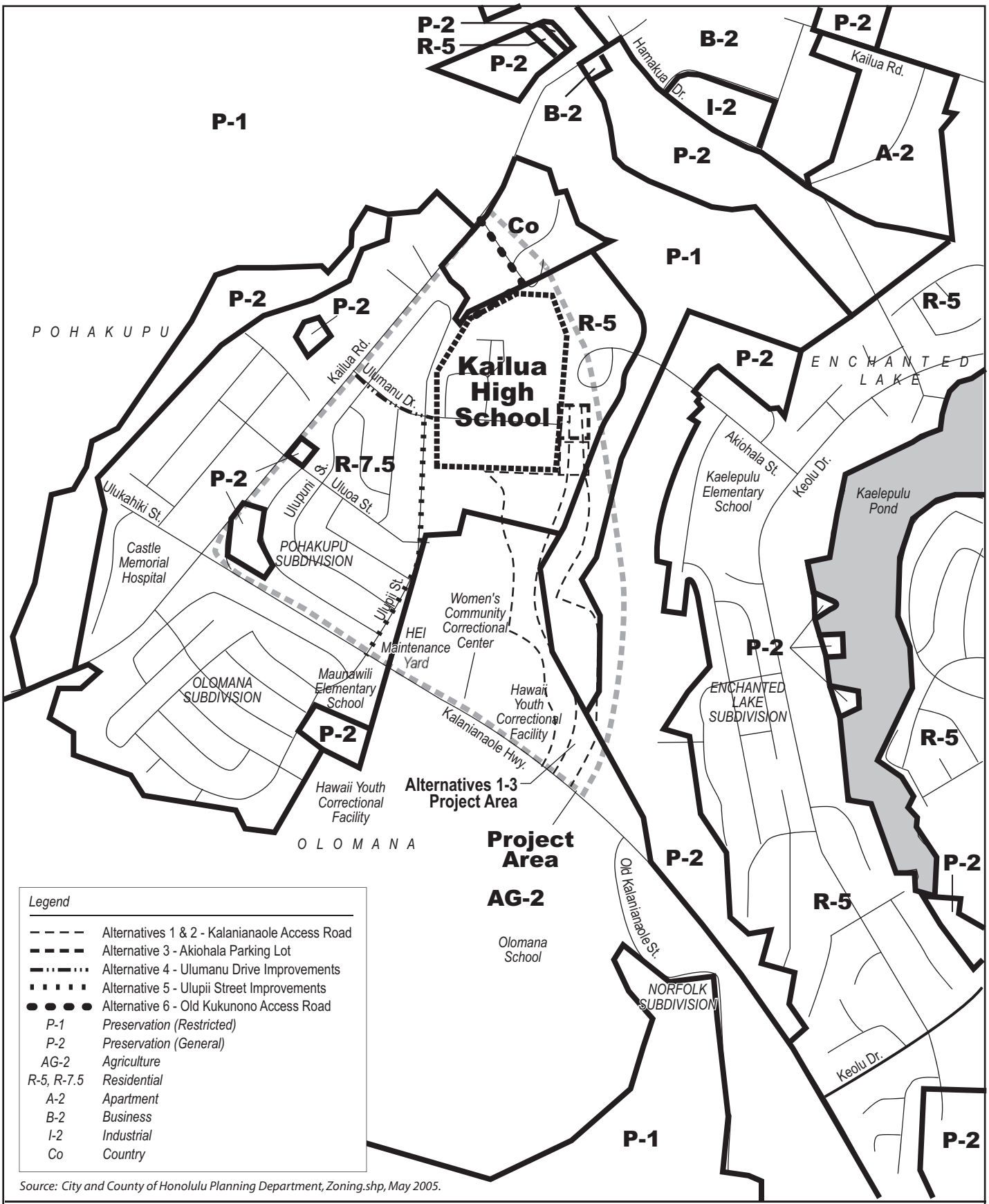
Alternative 6: Alternative 6 is zoned a Country District (see Figure 2-13), which provides for areas with limited potential for agricultural activities but for which open space and/or the rural character is desired. Basic public services and facilities to support the district are permitted in lands designated Country.

2.2.7.7 Coastal Zone Management (CZM)

Hawaii's designated coastal zone includes all land areas of the state and extends seaward three miles to the limit of the state's jurisdiction.

2.2.7.7.1 Hawaii Coastal Zone Management Programs

At the State level, the Hawaii's Coastal Zone Management Program (HICZMP) uses a broad management framework to integrate decisions made by state and county agencies and provide greater coordination of existing laws and rules. Based in the State Office of Planning, the HICZMP administers the programs federal financing and ensures that both state and county agencies comply with CZM law. State agencies such as the Land Use Commission, the Department of Lands and Natural Resources, Department of Health, Department of Transportation and Department of Agriculture frequently participate in the HICZMP. Each county in Hawaii plays a pivotal role in the HICZMP through "home rule," including management of Special Management Areas (SMAs)



Source: City and County of Honolulu Planning Department, Zoning.shp, May 2005.

SCALE:

0 1/8 mi. 1/4 mi.

N

Zoning

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-13

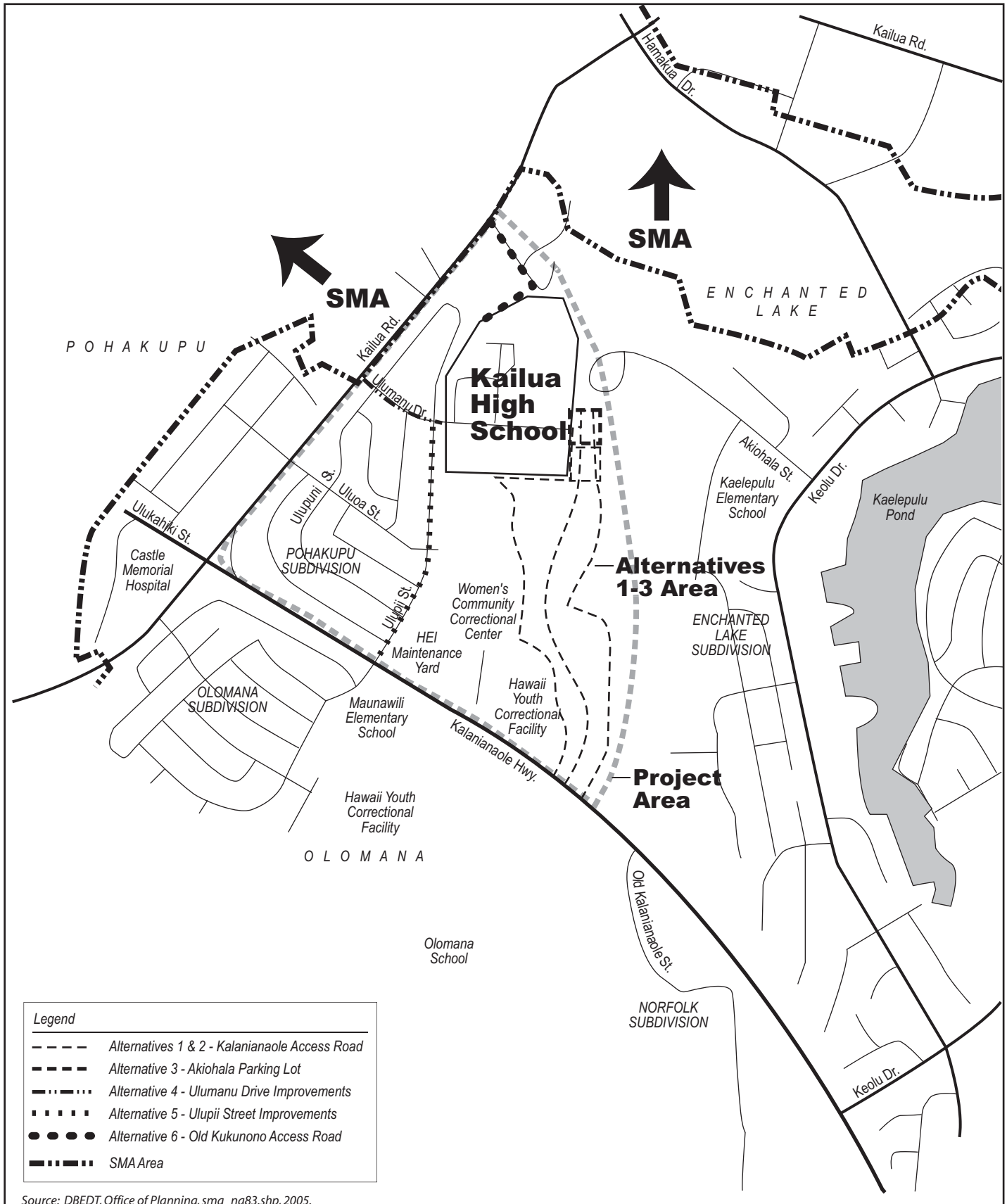
2.2.7.7.2 Special Management Area

The purpose of Special Management Area (Chapter 33 of the Revised Ordinances of Honolulu) is to preserve, protect, and, where possible, restore the natural resources of the coastal zone.

SMAs are a subset of the coastal zone and are areas where significant attention is paid to the potential impact that a development may have on coastal qualities. In particular, negative impacts on drainage, view planes, historic and cultural artifacts, coastal erosion, and shoreline access must be avoided, minimized and/or mitigated. The SMA includes all lands and waters beginning at the shoreline and extending inland or mauka for at least 100 yards. The SMA does not include any areas or waters seaward of the shoreline because the State has jurisdiction beyond the shoreline. In general, the SMA is bounded by the shoreline on one side (makai) and the nearest State highway on the other side (mauka). However, in the case of the Kailua area, the unique ecosystems of Kawainui Marsh, Oneawa Canal, and Enchanted Lake (Kaelepulu Pond) cause the SMA to be extended more than a mile inland, possibly due to the fact that over the last 2000 years a combination of cultural eutrophication (human-influenced ecosystem aging) and natural ecosystem processes have contributed to a natural bay becoming a inland wetland ecosystem, thereby extending the coastal boundaries inland much further than 100 yards.

Alternatives 4 and 6: The Special Management Area (SMA) designated on SMA maps indicates that Alternatives 4 and 6 are located within 0.25-mile of the Kawainui Marsh SMA limits (Figure 2-14).

Alternatives 1-6: Because proposed Alternatives 1-6 are all located outside the designated SMA limits, the proposed project will not require a Special Management Area Use Permit (SMP) from the City and County of Honolulu.



Source: DBEDT, Office of Planning, sma_na83.shp, 2005.

SCALE:

0 1/8 mi. 1/4 mi.

N

SMA Map

Kailua High School Additional Access
Draft Environmental Assessment
Figure 2-14

CHAPTER 3.0

ANTICIPATED DETERMINATION

3.1 PRIMARY AND SECONDARY CONSEQUENCES

Alternative 6 was rejected as a viable option because it would have required ROW (right-of-way) acquisitions of one to three residences and would have impacted a high-volume drainage ditch.

3.2 CUMULATIVE IMPACTS

While visual resources and some viewer groups in the area will experience a minor cumulative impact from further urbanization of a view plane, no scenic vistas or view planes identified in County or State plans or studies will be significantly affected.

3.3 UNRESOLVED ISSUES

3.3.1 Alternatives 1 and 2 Construction of New Roadway from Kalanianaole Highway to Kailua High School Property

Unresolved issues include:

- PSD security requirements built into the design of the road are likely to raise project costs by at least $1 million over present project appropriations.
- DOE issues surrounding campus circulation, safety, and security.
- Ownership and maintenance issues—due to DOE and City's resistance to accepting ownership; therefore, the responsibility is likely to defer to the State, but questions surrounding *which* State department will maintain the road after construction remain unresolved
- There remain safety, security, and liability issues related to the road being in a remote area and adjacent to the correctional facilities of the HYCF and WCCC.
- Alternative 2 has an additional unresolved issue that Alternative 1 lacks: the DOE and the KHS Principal adamantly oppose restrictions on the front gate access.

The aforementioned issues should be resolved prior to initiation of the project design phase.

3.3.2 Alternative 3 New Akiohala Parking Lot

KHS issues of security labor and lighting are still unresolved.

3.3.3 Alternative 4 Ulumanu Drive Sidewalk Improvements

The City owns the street; therefore, due to the fact the project is State initiated, there are jurisdictional issues that remain unresolved.

3.3.4 Alternative 5 Ulupii Street Sidewalk Improvements

The City owns the street; therefore, due to the fact the project is State initiated, there are jurisdictional issues that remain unresolved.

3.3.5 Alternative 6 Makai "Old Kukanono" Access Road

Although this new road connects many of the required project elements, questions related to reliability and safety of roadway use adjacent to a high-volume drainage ditch remain unresolved issues. Additionally, the potential for three residential properties to have Right of Way impacts is also a significant unresolved issue. Together, the unresolved issues surrounding constructing a road in defacto/natural drainage roadside drainage ditch and displacements of three residential properties have deemed alternative 6 unworkable and unworthy of further consideration.

3.3.6 Alternative 7 No Build

Alternative 7 proposes to maintain the status quo, with no proposed project improvements; therefore, the only unresolved issues are those that establish the project purpose and need—traffic reduction and safety in Pohakupu, as well as improved access to the high school.

3.4 ANTICIPATED DETERMINATION CRITERIA

In accordance significance criteria cited in Hawaii Administrative Rules (HAR) Section 11-200-12, the following criteria were taken into consideration in determining whether the proposed project might have the potential for significant environmental effects. The

explanations that follow describe the extent to which the proposed project fits the criteria.

1. **Does the project involve an irrevocable commitment to loss or destruction of any natural or cultural resource?**

   No loss to any significant natural or cultural resource would be experienced through implementation of any of the project alternatives.

   Alternatives 1 and 2: Implementation of Alternatives 1 and 2 would result in permanent changes to the existing hillside from excavation of the proposed roadway and parking lot, and some views from institutional facilities in the area could be impacted as a result. Approximately 3 of 25 acres in the project area would be graded to make way for more than a mile of new roadway from KHS to Kalanianaole Highway.

   Alternative 3: Permanent changes would result to the existing hillside from excavation of the proposed roadway and parking lot (the parking lot could be as large as approximately 30,000 square feet—same capacity as present student parking). No visual (due to lack of viewer groups) or hydrologic (due to relatively small size and lack of proximity to water resources) impacts are anticipated.

   Alternatives 4 and 5: Sidewalks would permanently stripe the yards of either Ulupii or Ulumanu Drives.

   Alternative 6: Approximately three ROW takings would occur in the vicinity of the Alternative 6 Makai "Old Kukanono" Access Road if implemented, resulting in the permanent displacement of households from those locations.

2. **Will the proposed project curtail the range of beneficial uses of the environment?**

   While some open space and viewplanes may be affected by implementation of Alternatives 1-3, benefits will be gained in terms of increased access to KHS for student commuters and emergencies, decreased traffic and increased safety in adjacent neighborhoods, and increased special events capacity and emergency access for KHS.

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

   As described in the land use consistency discussion (Section 2.2.7), the project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

4. Will the project substantially affect the economic welfare, social welfare, and cultural practices of the community or State?

Beneficial social impacts from reduction of pedestrian-vehicle conflicts in KHS-adjacent neighborhoods and increased KHS access are expected to result from implementation of the project (see sections 2.2.3 and 2.2.4), but none of the alternatives will substantially affect the economic welfare, social welfare (see Section 2.2) and cultural practices (see Section 2.1.8) of the community or State.

5. Can the project substantially affect public health?

The project will not have a substantial affect upon public health, although the six alternatives are anticipated to create positive pedestrian safety benefits for surrounding neighborhoods and other affected communities.

6. Does the project induce substantial secondary impacts, such as population changes or effects on public facilities?

No significant primary or secondary consequences are expected to result of implementation of the proposed action. A beneficial impact of lessened traffic congestion and increased pedestrian safety in the Pohakupu neighborhood could be realized to varying degrees through implementation of any of the six alternatives.

7. Will the proposed project cause a substantial short- or long-term degradation of environmental quality?

No long-term risks to health, safety, natural resources or infrastructure are anticipated as a result of implantation of the six alternatives. The proposed alternative will enhance long-term productivity by decreasing traffic congestion and improving safety in adjacent neighborhoods, in addition to providing KHS with a direct linkage to an arterial roadway.

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

While visual resources and some viewer groups in the area will experience a minor cumulative impact from further urbanization of a viewplane, no scenic vistas or viewplanes identified in County or State plans or studies will be affected.

9. Will the project substantially affect a rare, threatened, or endangered species or its habitat?

Although all proposed project alternatives lie within a mile of wetlands frequented by endangered waterbirds, there are no known threatened or endangered species habitats expected to be impacted by any of the proposed alternatives. In a letter dated September 14, 2005, the United States

Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered faunal species, or proposed or designated critical habitat occur on proposed alternative 1-3 sites. Alternatives 3-6 sites are located in residential neighborhoods; therefore, no threatened or endangered species or habitats exist.

10. Does the project have the potential to detrimentally affect air or water quality or ambient noise levels?

No impacts upon water quality are anticipated (see Section 2.1.4) for any of the proposed project alternatives. Although no long-term air or noise impacts are anticipated to occur from implementation of any of the project alternatives, short-term construction-related impacts upon air and ambient noise levels are likely to occur (see sections 2.1.10 and 2.1.11).

11. Is the proposed project likely to affect or 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?

According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM), the proposed project areas of the six alternatives are all located outside the 500-year flood plain (Figure 2-1) (FIRM, Panel No. 150001-0090-C, September 28, 1990).

A 2005 field investigation revealed small natural artesian springs at the base of the hillside some distance above the stream behind the WCCC. While these springs have the potential to be impacted to some extent by the construction of a road (Alternatives 1 and 2), if a potential impact does indeed exist, Best Management Practices (BMPs) are expected to mitigate any potential impacts to insignificance.

Although the proposed Alternative 6 makai road through Old Kukanono has the potential to affect stormwater runoff into the freshwaters of Kawainui Marsh, this alternative has been rejected for multiple reasons, and is no longer a potential consideration.

12. Are substantial affects anticipated upon scenic vistas and view planes identified in county or State plans or studies?

The development of an access road is not anticipated to adversely impact scenic vistas or view planes identified in County or State plans or studies. Distant views from the Pali Highway and Old Pali Road will not be impaired (Figure 2-4). Mount Olomana's views from the summits will be affected to a minor extent for a few hikers who use this resource (Figure 2-6).

13. Will implementation of the project require substantial energy consumption?

None of the six proposed project alternatives, if implemented, are anticipated to require substantial energy consumption, and a net energy savings could be realized from the long-term gas-savings gained from more efficient vehicular access to KHS.

3.5 ANTICIPATED FONSI

Based on the extent to which the aforementioned significance criteria compares to the environmental data collected to date, no significant environmental impacts that meet the criteria are anticipated to result from implementation of the proposed project; therefore, DAGS anticipates issuance of a Finding of No Significant Impact (FONSI).

CHAPTER 4.0
PERMITS AND APPROVALS

Initiation of all permits and approvals are currently pending commencement of the project design phase.

	Approval Required	**Authority**
1.	Grubbing, Grading & Stockpiling Permit	City Department of Public Works
2.	Variance from Pollution Controls	State Department of Health
3.	NPDES Permit	State Department of Health
4.	Noise Permit	State Department of Health
5.	Conservation District Use Application	State Department of Land & Natural Resources
6.	Permit for Work within State Right-of-Way	State Department of Transportation
7.	CZM Consistency Determination	Office of State Planning

CHAPTER 5.0
SCOPING

5.1 AGENCY COORDINATION

The following issues were generated from letters received from various government agencies in response to the project scoping letter calls for input.

5.1.1 Department of the Interior, Fish and Wildlife Service

In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered faunal species, or proposed or designated critical habitat occur on the proposed project site.

5.1.2 U.S. Army Corps of Engineers, Regulatory Branch

The proposed road would cross a feature, which is shown as a solid blue line on the 1983 U.S. Geological Survey Mokapu quadrangle map. This feature appears to empty into Kahanaiki Stream within Kawainui Marsh. Although the blue line is labeled as a pipeline on the 1983 map, an archaeologist's field observation indicates it may be an open ditch. The EA should describe any areas where the pipeline would be crossed by the proposed road, and additionally state whether there are any wetlands or other water bodies within the project site. A determination of Department of Army permit requirements will be determined when the information is disclosed.

5.1.3 Honolulu Board of Water Supply

The proposed alternatives 1 and 2 access road from Kalanianaole crosses BWS water pipeline easement 2, granted by State Executive Order No. 3490, which encompasses two existing BWS 12" mains and one 36" water main from the mauka reservoir site. Additionally, the BWS is interested in assurances that the new access road will not affect the existing BWS reservoir access road.

5.1.4 State Department of Education

The DOE transmitted the following scoping comments and issues:

1. The DOE strongly objects to the shifting of this study from a study of an additional access road to what is referred to as an alternate access road. There was nothing in the originating legislation that ever referred to a study of an access road to the exclusion of any other current access to KHS. The DOE opposes such an idea, which is entirely beyond the scope of the study, and they will continue to object to its consideration.

2. It will be necessary for the DEA to fully disclose who proposed the closing of the Ulumanu entrance and why. The DEA will also need to have a detailed discussion of the full impact of such a closure as one of many options. The discussion must include the reaction of the DOE personnel at Kailua High School, DOE engineers and architects, and DOE safety and security personnel.

3. All schools are designed with safety and security measures clearly in mind. To arbitrarily shift the main entrance of the school to the back of the campus negates all of those design accommodations. In addition, the shifting of the entrance of a school changes traffic patterns within the campus which would jeopardize how pedestrians cross the campus. For these reasons and others related to safety and security, KHS objects to any new access designs that facilitate use as a non-KHS-related thoroughfare.

4. It seems extremely peculiar that a consultant seeking consultation prior to drafting a DEA is already describing the project in terms that indicate a preferred outcome with anticipated results.

5. The DOE will not accept liability, ownership or maintenance responsibilities the additional road proposed by Alternatives 1 and 2.

6. The additional access shall not include elements that facilitate the Kailua High School campus' use as a thoroughfare.

5.1.5 DLNR Division of State Parks

Two State Parks could be indirectly impacted by the drainage pattern in the project area. There is a culvert that runs under Kailua Road, which channels water from the storm drains in the Pohakupu subdivision to a ditch alongside Ulupo Heiau. This water eventually enters Kawai Nui Marsh. There remains some uncertainty about other sources of water outside the Pohakupu subdivision that may be entering this drainage system. In addition, there are a number of springs on the slopes above Kawai Nui Marsh. Water from these springs is used to irrigate the loi kalo (taro patches) around Ulupo Heiau. Therefore, your studies should address any impacts the roadway may have on the water quality of these water sources and the existing drainage.

5.1.6 Women's Community Correctional Facility (WCCC)

The WCCC does not want responsibility for maintenance of any additional access alternatives, and expressed concern about ongoing liability, safety, and security issues.

5.1.7 State Department of Transportation

The Department of Transportation commented that in their previous discussions with the Department of Education, the Department of Accounting and General Services, and the Department of Public Safety, the consensus was that the access road does not qualify for functional classification and inclusion in the State Highway System; therefore, State Highway Special Funds may not be used for the planning, design, construction, operation, or maintenance of the road. With this restriction, the DOT's ownership of the access road is not advisable. DOT has offered its engineering services for the technical review of the traffic impact analysis report and the road designs that are prepared in conjunction with the construction of this road. The DOT has also offered to assist in the establishment of a new access point on Kalanianaole Highway and expedite the DOT's permit that is required for the construction of a new signalized intersection in the State Highway rights-of-way.

5.1.8 City Department of Planning and Permitting (DPP)

DPP expressed concern over a determination of functionality of the proposed new access road, and they assert that ownership and infrastructure issues arising out of the new access road appear to be related primarily to the State of Hawaii. These issues include, but are not necessarily limited to security, maintenance, egress and ingress from Kalanianaole Highway, the Women's Community Correctional Center Facility, and Kailua High School. The DPP has recommended that the new access road be considered a driveway, rather than a street, since the primary purpose appears to be exclusively to service Kailua High School.

5.1.9 City and County of Honolulu Land Division

The City will not accept dedication of the road. Ownership and maintenance should remain with the State.

5.1.10 City departments of Facility Maintenance, and Transportation Services, and Design and Construction

Comments received in a scoping letter from the City departments of Facility Maintenance, Transportation Services, and Design and Construction, indicated that they viewed the access as a driveway that exclusively services the high school and as such, it appears that ownership should be with the State of Hawaii. The letter asserted that because of the City's stringent budget conditions and reduced staff, it would not be in the City's best interests to undertake ownership or maintenance of the proposed access because it would subject the City to an increased risk of liability and added maintenance and enforcement costs.

The Department of Transportation Services (DTS) commented that surrounding communities and stakeholders be consulted , including the State of Hawaii, Department of Transportation, because the proposed road connects with Kalanianaole Highway, a State facility. DTS additionally commented that if traffic signals are to be installed, they should be connected to the Kailua Road/Kalanianaole Highway signal.

The City and County Department of Facilities Maintenance cited budgetary constraints in their unwillingness to undertake ownership or maintenance of the proposed additional access road options proposed in Alternatives 1 and 2. The City expressed

concern that ownership of an access road would subject the City to an increased risk of liability and added maintenance and enforcement costs. The departments of Facility Maintenance and Transportation Services view the access as a driveway that exclusively services the high school, and as such, they assert that ownership should rest with the State of Hawaii or the Department of Education.

5.2 STAKEHOLDER COORDINATION

In response to the project scoping letter calls for input, the following issues were generated from meetings and letters received from various community groups and stakeholders, including Kailua High School (KHS), WCCC, and the DOE.

5.2.1 Community Meetings

5.2.1.1 The Kailua Neighborhood Board #31

The Kailua Neighborhood Board #31 is active in managing community relations and affairs encompassing the Pohakupu subdivision. The proposed project has been presented at board meetings. In a letter dated August 23, 2005, Kailua Board #31 conveyed concerns that the following issues be addressed in the EA: social impact/community safety for the residential area of Pohakupu when the additional access is functional; improved safety and security for residents and students in emergency situations as the High School is a designated shelter (hurricanes, homeland security, etc.); reduction of noise in existing residential areas; reduction in traffic volume in residential areas with the alternative route.

Reduction in traffic volume in residential areas and improved travel efficiency for students coming from Waimanalo.

5.2.1.2 Pohakupu Community Association

On Thursday, August 9, 2006, at the request of community members, PB met with the Pohakupu Community Association Board to provide an overview of the status of the project. Information was shared and the overall attitude of the attendees was neutral, neither supportive nor adversarial.

5.2.1.3 Olomana Community Association

Scoping comments were received from the Olomana Community Association that support the project.

5.2.2 Task Force Meetings

Community Task Force meetings were convened on 7-19-05 and 7-21-05. The purpose of the meetings was to coordinate with task force members to communicate and discuss relevant issues, in order to better scope anticipated project planning and information required to produce a comprehensive and accurate environmental assessment (EA) document. Meetings covered studies underway, the project emailing list, agency and community pre-consultation, EA and anticipated FONSI, project schedule; discussions of possible agency adoption of the project, construction funding, Women's Community Correctional Center (WCCC) security requirements, public safety, Task Force scoping input, and "next steps" in the process.

Agencies and stakeholders attending the meeting as part of the Task Force included representatives from the State of Hawaii Department of Education (DOE); the State of Hawaii Department of Public Safety (PSD); the City and County of Honolulu Board of Water Supply (BWS); the City and County of Honolulu Fire Department (HFD); the City and County Division of Public Works, Planning Branch; the State of Hawaii, the Department of Accounting and General Services (DAGS), Division of Public Works, Planning Branch; the Kailua Neighborhood Board Legislative Liaison and Kailua Community Project Leader.

5.2.2.1 Agency Issues

5.2.2.1.1 State of Hawaii Department of Public Safety (PSD)

Security of WCCC is key concern:

- Criteria regarding minimum lateral clearance and requirements for fencing and roadway lighting have been transmitted to Parsons Brinckerhoff by PSD. These will be incorporated in all alternative roadway schemes. The estimated cost for PSD design-related requirements is approximately one million dollars.

- Non-school hour use of the proposed access roadway is a concern. The preference would be to have roadway gated during non-school time periods. If gated, the gate needs to be resistant to pedestrians as well as vehicles.

5.2.2.1.2 City and County of Honolulu Fire Department (HFD)

The HFD's primary concern was to maintain access even if the proposed roadway is gated.

HFD Access through Locked Gates

HFD indicated that gates could be installed and locked as long as only padlocks will be used to secure the gates. HFD will be able to use bolt-cutters to remove padlocks. It was also mentioned that there are special padlocks that open with a special key that HFD has. DAGS agreed to look into procuring that type of padlock.

Proposed Access Could Improve Fire Access to Kailua High School

Photographs were circulated that indicated that overflow parking from Kailua High School special events created physical barriers (i.e. cars blocking) to HFD access in the past. The hope is an additional access road and additional parking will help to alleviate this problem.

Turnaround Area for Fire Trucks

The proposed access road would have a vehicular turnaround at Kailua High School. This vehicular turnaround would be large enough to accommodate schools buses, and, therefore, would be large enough to accommodate fire trucks.

Vertical Clearance Requirement

The discussion of vertical clearance was generated by discussion involving potential measures to protect the security of WCCC (such as completely caging parts of the proposed roadway). HFD would not have a problem with caging or other measures to insure security of WCCC as long as a minimum vertical clearance of thirteen feet-six inches (13'-6") is maintained for fire truck access. HFD indicated that no fire hydrants

will be needed along the proposed access road because there are no structures proposed along the roadway corridor.

5.2.2.2 Proposed Access Roadway Issues

PB presented background information on potential roadway alignments, access options, and connection options. Also discussed was non-school hour use of the proposed access roadway and whether to allow bicycles and pedestrians to utilize the proposed access road.

5.2.2.3 Developments of Intersection Alignment Alternatives

Alignment alternatives differ mainly in where the proposed access road would intersect Kalanianaole Highway. One alternative would intersect Kalanianaole opposite Old Kalanianaole, while the other would intersect Kalanianaole adjacent to WCCC.

The alternative that would intersect opposite Old Kalanianaole was determined to be undesirable due to lack of sufficient stopping sight distance for Town-bound vehicles on Kalanianaole Highway.

The alternative that would intersect Kalanianaole adjacent to WCCC must respect criteria identified by PSD regarding lateral spacing from WCCC fence line and measures to discourage introduction of contraband into WCCC.

5.2.2.4 Development of Alternatives for Kailua High School Access

5.2.2.4.1 Description of Existing Accesses

Currently, there is only one public vehicular access to KHS, and it is located at Ulumanu Drive. This access provides entry into the internal KHS roadway system and to the student drop off area, faculty and staff parking, and student parking areas.

The Akiohala Street driveway into KHS does not allow vehicular entry onto the campus. It leads to a vehicular turnaround that serves as student drop off for school buses and private vehicles.

5.2.2.4.2 Description of Proposed Access and Limitations

PB mentioned that, based on a meeting with the KHS principal and staff, KHS does not want the proposed access road to connect into the school roadway network in a way that would encourage traffic through the campus or that would require vehicles to negotiate the existing campus roadway located between the main campus and the athletic fields to reach a student drop off location.

Using the KHS discussion as a guide, the proposed access roadway was conceptually configured to end at a vehicular turnaround similar to the one at the end of the Akiohala Street access. This would be located on the Waimanalo side of the existing baseball field. General vehicular traffic would not be allowed to access the KHS campus.

5.2.2.4.3 Closure of Ulumanu Drive Access

The Ulumanu access restriction emphasizes the reduction in KHS vehicles passing through the Pohakupu neighborhood. Redirecting student drop-offs and student parking to the new access, is consistent with this goal.

An initial study has been conducted that counted traffic volumes during the morning and afternoon peak periods at KHS. This study also conducted an origin-destination interview survey of vehicles arriving and departing during the peak periods. Through this study a directional distribution of vehicular trips was developed, and based on this directional distribution, it is judged that the proposed access road would be utilized primarily by Waimanalo area trips if the Ulumanu Drive access remains open to traffic. Only by closing the Ulumanu Drive access will traffic from Kailua Town, Kaneohe, and Honolulu reroute to the new access roadway. Closing the Ulumanu Drive entrance into the high school may be an issue for Coconut Grove and Kailua Town residents who might not appreciate having to pass through the congested Kalanianaole/Kailua Road intersection twice, to and from the proposed Kailua High School access. However, an alternative exists in the Akiohala Street access.

Therefore, the initial recommendation is to close the Ulumanu Drive access to vehicular traffic subject to discussions of the ramifications of this closure with KHS staff and the Kailua community. Presently, the DOE and KHS strongly oppose restriction or closing the Ulumanu Dive entrance.

5.2.2.4.4 Connection of Proposed Access Road to Akiohala Street or Ulumanu Drive

The potential for the proposed access road to be connected with either Akiohala Street (Alternatives 1 and 2) or Ulumanu Drive (Alternative 6), or both, was discussed. Descriptions of the various connection alternatives discussed follow, but KHS safety and security concerns about cross-campus access and pedestrian-vehicle conflicts eliminated the possibility of connecting the proposed road to Akiohala Street or Ulumanu Drive.

5.2.2.4.5 Connection with Ulumanu Drive

The Kailua Community Project Leader indicated that the option of connecting either the proposed access road or Akiohala Street to Ulumanu Drive through Kailua High School (KHS) is not desirable from the Pohakupu neighborhood perspective.

Likewise, it was related that KHS staff had clearly stated at previous meetings that they were opposed to such a connection. Their primary reason for this concern is student pedestrian safety on campus.

Based on these statements, it is reasonable to expect that there would be opposition for an Akiohala to Ulumanu connection or a proposed access to Ulumanu connection.

5.2.2.4.6 Connection with Akiohala Street

A community member supported a connection between Akiohala Street and the proposed access roadway. At previous meetings, KHS staff has expressed concern about safety of student pedestrians along Akiohala Street if such a connection was made due to the potential of increased traffic volumes.

There was no consensus on whether an Akiohala to proposed access roadway connection would be desirable, but the feasibility of such a connection would depend on addressing the KHS concerns and on how access to KHS was configured.

5.2.2.4.5 Pedestrian and Bicycle Use of the Proposed Access Road

The use of the proposed access road by bicyclists and pedestrians was discussed. Current design concepts do not include pedestrian or bicycle facilities on the proposed access road. If these uses are expected, facilities need to be provided.

Parsons Brinckerhoff (PB) pointed out that based on the location of existing residential development, there would be a low demand for pedestrian access via the proposed access road. The only potential area generating pedestrians that might want to use the proposed access road would be from Norfolk Subdivision (Old Kalanianaole Road). Pedestrians from Olomana and Pohakupu would most likely use Ulupii Street to the existing main Ulumanu access to Kailua High School (KHS). Pedestrians from Enchanted Lake would most likely use Akiohala Street.

There was general agreement that the area did not generate large numbers of pedestrians, but it was also pointed out that KHS students are presently dropped-off on Kalanianaole Highway near Ulupii Street. This could be due partly to the existing restriction on right turns at Ulupii Street or to the difficulty in re-entering the congested traffic stream on Kalanianaole Highway or Kailua Road during peak time periods. Still, this maneuver could potentially occur in the vicinity of the proposed access road, so the provision of pedestrian and bicycle facilities on the proposed access road are issues that need to be considered.

A second concern pertained to use of the proposed access road by bicyclists and pedestrians during non-school hours. Even if the proposed access road is gated, pedestrians and bicyclists could potentially enter the roadway unless fencing material such as chain link is used. The issue of non-school hour use needs to be discussed further.

5.2.2.6 Special Events

The traffic study was conducted during April 2005 while school was in session to evaluate regular school operations. However, it was also noted during discussions with the community and with KHS staff that special events also causes traffic issues in the Pohakupu subdivision. Footballs games and graduation are major events that create neighborhood issues due to large traffic volumes and demand for parking.

The proposed access road has the potential to reduce traffic in the Pohakupu neighborhood by providing a direct access into KHS from Kalanianaole Highway.

5.2.3 Stakeholder Meeting: September 29, 2005

Based on the results of the first meeting on July 19, 2005, a second meeting was convened on September 29, 2005, at Kailua High School, for stakeholders with remaining concerns that warranted further attempts at resolution. Meeting attendees included representatives from: the Department of Education (DOE); Kailua High School; the Department of Public Safety (PSD); the Division of Public Works, Planning Branch, Department of Accounting and General Services (DAGS); and Parsons Brinckerhoff (PB). The reason the project was conceived was to reduce high school related traffic in the Pohakupu neighborhood. The goal of the meeting was to obtain the Department of Education's input on possible project alternatives and their potential impact to Kailua High School and the larger Kailua community.

The consultant presented preliminary findings from a traffic pattern survey performed at Kailua High School. Discussions of alternatives analysis followed, including: 1) restriction of Ulumanu Drive access strategies and concerns; 2) special events considerations; 3) possible parking lot impacts and configurations, 3) sidewalk construction; 4) cost-benefit analysis of alternatives; and 5) Kailua High School's "preferred" alternative. Additionally, other issues discussed included land ownership, legislative intent, safety concerns, and the traffic report.

The traffic report noted that three hundred cars use the Ulumanu entrance (multiuse: student drop off, student parking, teacher parking, deliveries, etc) in the morning, and 100 use Akiohala (student drop off only). PB representation commented that there is likely to be little use of the proposed new access road if the Ulumanu entrance remains *unrestricted*. "Restriction" was defined in terms of various options, none of which included permanent closure of the Ulumanu entrance gate.

5.2.3.1 Restricting Ulumanu Drive Access

Some of the possible options presented to restrict access to the Ulumanu entrance gate include:

1. Close the gate during peak traffic times.

2. Allow only teachers and staff entrance by person stationed at the gate during peak times. There is already someone stationed there in the mornings;

3. Student who park, in addition to teachers and staff will be allowed go to enter the gate.

5.2.3.2 Kailua High School Public Relations Concerns

KHS Principal Honda asked how new students, their parents, and substitute teachers would be accommodated. She was particularly concerned about how new parent and Kailua High School public relations could be affected, and reiterated that she was not convinced that restricting Ulumanu Drive entrance is a good idea because staff will be required to communicate with security, resulting in an impact to school operations.

Principal Honda said that it would be unacceptable to close the Ulumanu Drive entrance, this option was never mentioned in talks with Community Project Leader Mike Heh, and Kailua residents who be required to turn Left onto Kalanianaole Highway would be significantly inconvenienced.

Mention was made that consideration should be given to the "broader" community that also uses the Kailua High School facilities.

The Kailua Neighborhood Board and the Pohakupu Community Association have been allowed opportunity for input through project notification letters and project status updates at monthly meetings.

In addition, the Governor has established a KHS Task Force that meets periodically, comprised of stakeholders representing all affected KHS communities.

5.2.3.3 Gate security during "peak" hours

The consultant suggested that the discretion of the person stationed at the gate should allow for sufficient flexibility to accommodate new students, parents, and substitute teachers; and that the only restriction suggested would be during the "pulse" of heavy traffic during peak school *drop-off* and *pick-up* hours.

DOE stated the person presently stationed at the gate is to provide "safety," and some concern was expressed that additional duties might compromise the ability to carryout the current ones. The four security guards are already pressed to cover the size of the present campus.

The consultant pointed out that people who are making right turns from Kalanianaole to drop off their children are in violation of posted laws that restrict turns during *peak* school hours, and are themselves posing somewhat of a safety issue. Access through the Ulumanu gate would be *opened* during non-peak hours. The Kailua High School Principal said she still has serious reservations about closure of the Ulumanu Drive entrance except during sporting events, at which time closure may be acceptable.

5.2.3.4 Parking Lot Requirements

The PSD representative asked how many acres would be needed in order to create a parking lot near the current drop off circle on Akiohala / end of new access road.

The consultant replied that once potential configurations have been identified, a meeting with PSD will be scheduled to discuss the issue.

Possible re-configurations of Akiohala and the new access road could provide parking lots and *restricted* access onto school grounds.

DOE stated the parking lot would need night lighting.

The access from the parking lot to other parts of the campus could be granted / allow via gates during special events.

The Kailua High School Principal commented that existing security staff could be relocated, or new staff could be reassigned to the back if a new student parking lot was constructed, and she also stated that the majority of the school traffic consisted of *drop-offs*.

5.2.3.5 Pohakupu Pedestrian Traffic and Construction of a Sidewalk

Pedestrian safety on Ulumanu and Ulupii streets is an issue. Many of the pedestrians are Kailua High School students. It was reported that there was a student pedestrian fatality in Pohakupu twenty years ago. Some attendees suggested that Ulumanu Drive should be improved to include a better sidewalk (there is an AC sidewalk now). The DAGS representative asked about the possibility of *only* building sidewalks, and if that would alleviate safety concerns for the Pohakupu neighborhood. A question was posed by PSD: If safety is a concern for Pohakupu, why not just build sidewalks with curbs? Also asked: To what extent does the Pohakupu community expect traffic will be reduced, and how much safety will be provided by an additional access road? The consultant emphasized that determination of what is "satisfactory" will come after discussions with the community. It was also suggested that sidewalks serve the same safety function as the road, and if so, should they be examined as an option?

5.2.3.6 Cost-Benefit Analysis of Alternatives

The consultant questioned the need to build a new road if only a few cars will use it, and parking remains an option, and suggested that a cost-benefit analysis might better determine if a new road is the best option.

5.2.3.7 Kailua High School's Preferred Perspective

From Kailua High School's perspective, the preferable alternative would be one which offered sidewalks or a "pedestrian-friendly" walkway and additional parking, in combination with Akiohala Street access. KHS representatives suggested that consideration should be given to the broader community, including those not necessarily making use of KHS facilities (e.g. Pohakupu pedestrians and drivers and pedestrians from adjacent communities), but are nevertheless affected by KHS operations.

5.2.3.8 Special Events Issues

The DOE representative commented that one or more alternatives should address the special events needs.

The Kailua High School perspective on this issue was that sidewalks would not solve the problems surrounding special events. The consultant stated that there are only 3-4 overflow traffic events a year.

Principal Honda commented that sometimes there are multiple events on weekends, and that development of additional parking is not part of current appropriations. The question arose as to if just building parking might solve the special events problem. A controlled gate near the new lot, with access provided to the other parts of the campus is possible. Security could be relocated to the new lot if this configuration was implemented. The KHS Principal reiterated that redirection of security could only happen during special events. During special events, the Ulumanu entrance could be closed, but the rest of the campus could be open for parking.

5.2.3.9 Land Ownership Issues

The Kailua High School Principal stated that road ownership, maintenance and other staff or cost issues for improvements cannot be accommodated. The PSD representative stated that he would explore the feasibility of PSD parcels being transferred-over to DOE for the purpose of constructing a parking lot.

The PSD representative commented that they will *only* turn over land for development after an "owner" has been identified.

The DOE will not accept liability, ownership or maintenance responsibilities the additional road proposed by Alternatives 1-2.

5.2.3.10 Legislative Intent and Alternatives Analysis

The DOE representative noted that legislation aimed at improving the Kailua High School access was supposed to provide for an "additional" road, not "new" access at the expense of the present access road system, and that the "big problem" is special

events. In addition, if an alternative road was constructed, traffic in the Pohakupu subdivision would be affected regardless of whether Ulumanu Drive access was restricted or not.

5.2.3.11 New Roads Safety Concerns

Kailua High School representation expressed concerns that a new road could be used for unlawful or mischievous activities. The PSD representative added that 90% of the PSD clients have substance abuse histories, which presents public safety and security concerns that should be addressed by PSD road design requirements.

Other questions posed:

1. Could access to a new road pose a risk of more gang fight "posse" incidents that allow the school zone of interaction to go outside the presently centralized security configuration?

2. Could this impact the reaction speed of police who have been called-in for fights and drugs?

3. Would the road create an incentive for more students to get dropped off in the Pohakupu neighborhood and Kailua Road?

4. Fire hazards along the road were mentioned as a concern: e.g. what if cigarettes are tossed from vehicles into dry vegetation?

5.2.4 Historic Preservation Consultation: June 15, 2005

A meeting was held with the State Historic Preservation Division (SHPD) to discuss historic resources on June 15, 2005, at the Offices in Kapolei. Attendees included representatives from the State Historic Preservation Department, Scientific Consulting Services (SCS) and Parsons Brinckerhoff. The purpose of meeting was to initiate coordination with SHPD on the archeological and cultural aspects of the project. Clarify proposed methodologies and assure mutual understanding of the next steps in planning and design processes.

Recommendations made by SHPD were as follows:

1. SHPD representatives said subsurface testing and an inventory will be expected due to the fact that the surrounding areas (Ulupo Heiau, Mount Olomana, and Kawainui Marsh) are archaeologically rich in resources, therefore it is logical that the proposed area could likewise contain significant archaeological deposits.

2. Subsurface utilities such as water lines need to be identified prior to contractors breaking ground.

3. SHPD suggested including OHA and Burial Council Representative Kalei Kini on the cultural resources distribution.

   PB agreed to forward cultural informant and distribution lists to Nathan Napoka for review and comment.

   The final Archaeological report will be submitted to SHPD for review and approval.

5.3 PUBLIC REVIEW AND COMMENT

5.3.1 Community and Cultural Groups

Letters were sent to various community and culturally-related organizations and individuals in the Kailua area, informing them of the proposed project and requesting their project scoping contributions to help document past uses of the project area, as well as potential impacts to community and cultural resources. Some of the issues raised included concerns about over-development, unnecessary expenditure of public funds, visual impacts of the proposed road for Alternatives 1 and 2, and cost and visual impacts of proposed sidewalks. Detailed responses to cultural scoping are presented in the Cultural Resources Assessment in Appendix B.

5.3.2 Pohakupu Community

All residents within Pohakupu were sent scoping letters requesting their input on the proposed project alternatives. Some of the issues raised by residents included:

One Pohakupu resident suggested an additional right lane on Kalanianaole for those trying to get to the High School, other schools and into Kailua Town.

One Olomana subdivision resident in favor of the Alternatives 1 and 2 access road cited the following reasons: the access road would remove many teenage drivers and delivery trucks from the streets of a residential area; it would remove many from a busy section of highway from the correctional facility to Castle Hospital; cars and trucks going to the high school must now stay on the highway and they clog the lanes going to Honolulu. The many commuters from Waimanalo and Enchanted Lake would appreciate any relief from the Castle Hospital bottleneck. The Olomana community would then have fewer drivers cutting through the subdivision in order to avoid the traffic light.

Another Pohakupu resident stated that there are many elementary school children walking these roads and dodging high school traffic in order to get to Maunawili Elementary School.

The access road will provide a direct route to Kailua High School for students from Waimanalo, Enchanted Lake, and Keolu Hills decreasing traffic and creating fewer cars on Kalanianaole Highway during peak traffic.

CHAPTER 6.0

LIST OF PREPARERS

6.1 PROPOSING AGENCY:

DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES (DAGS)

6.2 CONSULTANT TEAM:

PARSONS BRINCKERHOFF

6.3 SUB CONSULTANT TEAM:

- CONTROL POINT SURVEY
- ENVIRONMENTAL PLANNING SOLUTIONS
- SCIENTIFIC CONSULTING SERVICES (SCS)

CHAPTER 7.0

DISTRIBUTION LIST

7.1 FEDERAL GOVERNMENT

U.S. Army Corps of Engineers

National Marine Fisheries Service

Manager, EPA—PICO

Pacific Islands Administrator Fish & Wildlife
Services, Dept. of Interior

District Chief, Dept. of the Interior

U.S. Geological Survey

7.2 STATE GOVERNMENT

Dept. of Accounting and General Services

Dept. of Agriculture

Dept. of Business, Economic Development & Tourism

Energy, Resources & Tech. Division

Dept. of Defense

Superintendent, Dept. of Education

Chairman, Dept. of Hawaiian Home Lands

Dept. of Health, Environmental Planning Office

Dept. of Health Hazard Evaluation and Emergency Response Office.

Dept. of Land & Natural Resources

State Historic Preservation Officer

Dept. of Land & Natural Resources

Burial Council Representative Kalei Kini.

DLNR Land Division Engineering Branch

DLNR State Parks Division

Dept. of Housing Finance & Development Corp.

State Libraries

Hawaii State Library

Hawaii Documents Center

Kailua Public Library

Kaneohe Public Library

Waimanalo Public Library

Waimanalo Junior High School Library

Dept. of Transportation

Department of Public Safety

Office of Environmental Quality Control

Office of Hawaiian Affairs

Office of Planning

UHM Environmental Center

UHM Marine Programs

UHM Sea Grant

UHM Water Resource Research Center

Women's Community Correctional Center

7.3 CITY AND COUNTY GOVERNMENT

Board of Water Supply, Chief Engineer

District 3 City Council

Neighborhood Commission Office

Dept. of Community Services

Dept. of Design & Construction

Dept. of Emergency Services

Dept. of Enterprise Services

Dept. of Environmental Services

Dept. of Facility Maintenance

Dept. of Planning and Permitting

Dept. of Public Works

Dept. of Transportation Services

Honolulu Fire Dept.

Honolulu Police Dept.

Mayor

Managing Director

7.4 ORGANIZATIONS AND BUSINESSES

American Lung Association

Castle Foundation, Kate Braden

City Editor, Hon. Star Bulletin

Coconut Grove Community Association, Libby Tomar

Ducks Unlimited, Inc., Sharon Reilly

Editor, Hon. Advertiser

Editor, The Honolulu Weekly

Enchanted Lake Homeowners Association

Hawaii Audubon Society

Hawaii's 1000 Friends

HECO

Historic Hawaii Foundation

Kailua Bay Advisory Council

Kailua Chamber of Commerce

Kailua Hawaiian Civic Club

Kailua Neighborhood Commission Office

Kailua Neighborhood Board

The Kawainui Heritage Foundation

Kawainui Vista Homeowners Association

Knotts Ranch, Evie Lingle

Kukilakila Community Association

Lanikai Community Association

Lani-Kailua Outdoor Circle

Le Jardin Academy, Adrian Allan

Henry Curtis (Director) Life of the Land

Maunawili Community Association

National Audubon Society

Pa Ku`i A Holo, Curators of Ulupo Heiau)

The Nature Conservancy of Hawaii

The Outdoor Circle

Sierra Club, Hawaii Chapter

VO Ranch, John Cash

Waimanalo Neighborhood Board

7.5 INDIVIDUALS

1. Abbott, Larry
2. DeCastro, Virginia
3. Duncan, John
4. Mr. and Mrs. Casey Pereira
5. Figel, John
6. Phillips, Lunsford
7. Sansone, Anthony
8. Smith, Barbara (Hoppy)
9. Sulky, G. & D. Kroll
10. Turner, Cindy
11. Mr. and Mrs. L. J. Wipple
12. Heh, Mike
13. Glanstein, Debbie
14. Peter Miller
15. Joe Ryan

7.6 CULTURAL INFORMANTS

1. Chuck Burrows
2. Dr. Diane Drigot, Kaneohe Marine Corp Base Environmental Director
3. Dr. Victoria Creed, Cultural Surveys Hawaii

7.7 KAILUA HIGH SCHOOL PLANNING FOR NEW ACCESS ROAD INTERGOVERNMENTAL TASK FORCE: PRELIMINARY LIST OF PARTICIPANTS:

Mr. Rodney K. Haraga, Director

State Department of Transportation

Mr. John Borders

Department of Public Safety

Ms. Heidi Meeker

Department of Education

Facilities and Support Services Branch

Mr. Paul Won

Department of Transportation Services

City and County of Honolulu

Ms. Laverne Higa, Director

Department of Facility Maintenance

City and County of Honolulu

Mr. Henry Eng, Director

City and County of Honolulu

Department of Planning and Permitting

Honolulu Municipal Building

Mr. Steven Kishida

City and County of Honolulu

Fire Department

Lt. Kennard Finn

City and County of Honolulu

Police Department

Kaneohe Station

Mr. Gregory Shiu

City and County of Honolulu

Board of Water Supply

Engineering Branch

Ms. Francine Honda, Principal

Kailua High School

Mr. Wilson Kekoa Ho, Chairman

Waimanalo Neighborhood Board

Mr. Michael E. Heh

Community Project Lead

Mr. Lance Maja, Project Engineer

Division of Public Works

Department of Accounting and General Services

Mr. Perry Small

Parsons Brinckerhoff Quade & Douglas, Inc.

Ms. Debbie Glanstein

Legislative Liaison

Mr. Francis Sequeira

Warden

Women's Community Correctional Center

CHAPTER 8.0
REFERENCES

Acoustical Society of America, "Sound Level Descriptors for Determination of Compatible Land Use," ANSI 23.23, 1980.

Belt Collins & Associates, "Draft Environmental Impact Statement for the Waahila 180 and Waahila 405 Reservoirs, Manoa, Oahu," April 20, 1989.

Carpenter, Richard A. and James E. Maragos, 1989. *How to Assess Environmental Impacts on Tropical Islands and Coastal Areas*, Environmental and Policy Institute, East-West Center; Honolulu, Hawaii.

Chu, M.S. and R.B. Jones, "Coastal View Study," Prepared for City & County of Honolulu, Department of Land Utilization, 1987.

Dames & Moore, "Report-Geotechnical Investigation, Proposed Kailua 272' Reservoir for Board of Water Supply, City and County of Honolulu," January 1993.

Engineering Concepts, Inc., "Environmental Assessment for the Kailua 272' Reservoir", Prepared for Board of Water Supply, March 1993.

Engineering Concepts, Inc., "Feasibility Study for the Kailua 272' Reservoir," Prepared for Board of Water Supply, June 1992.

Engineering Concepts, Inc., "Final Environmental Impact Statement for the Kailua 272' Reservoir," Prepared for Board of Water Supply, July 1996.

Hammatt, Hallett H., Michael Pfeffer and Victoria S. Creed. 1992. Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road, Kailua, Ahupua`a of Kailua, Island of O`ahu, Cultural Surveys Hawaii, Kailua HI.

Hawaii State, Data Center Report, 2000-3, http://www.state .hi.us/dbedt/census2k/

Hawaii State, Department of Health, Hawaii Administrative Rules, "Chapter 42: Vehicular Noise Control for Oahu," November 6, 1981.

Hawaii State, Department of Health, Hawaii Administrative Rules, "Chapter 43: Community Noise Control for Oahu," November 6, 1981.

Hawaii State, Department of Land and Natural Resources, Oahu Water Management Plan, May 1992.

Hawaii State, Department of Land and Natural Resources, Rainfall Atlas of Hawaii, June 1986.

Hawaii State, Department of Planning and Economic Development, Hawaii Administrative Rules, Chapter 15: Land Use Commission Rules, September 3, 1986.

Hawaii State, Department of Planning and Economic Development & Tourism, The State of Hawaii Data Book, 1991.

Hawaii State, Office of Sate Planning, The Hawaii State Plan, Chapter 226, Hawaii Revised Statutes, 1991.

Honolulu Department of Planning and Permitting, 2000 Census SF1 File; January, 2002.

Helber Hastert & Fee, Planners, "Draft Environmental Impact Statement, Kailua Gateway Development," Prepared for Kaneohe Ranch, March 1992.

Honolulu, City and County of, "Article 6. Koolaupoko, Part I: Development Plan Special Provisions for Koolaupoko."

Honolulu, City and County of, "Chapter 24: Development Plans," Ordinance No. 92-14.

Honolulu, City and County of, Oahu General Plan, 1987 Edition.

Honolulu, City and County of, Revised Ordinances of Honolulu, "Chapter 33. Special Management Area for the City and County of Honolulu".

Honolulu, City and County of, Board of Water Supply. Annual Report and Statistical Summary, July 1, 1990 – June 30, 1991.

Honolulu, City and County of, Department of Land Utilization, Land Use Ordinance, 1991.

MacKenzie, Melody Kapilialoha. 1991. *Native Hawaiian Rights Handbook*. Native Hawaiian Legal Corporation, Honolulu, Hawaii.

Malo, David. 1991. Hawaiian Antiquities (Moolelo Hawaii), translated from Hawaiian y Nathaniel B. Emerson, 1989, *Bishop Museum Special Publication* No 2, 2nd edition. Honolulu, HI.

McAllister, J.G. 1933. Archaeology of O`ahu, Bishop Museum, Bulletin 104, Honolulu, HI.

Rossing, Thomas D., The Science of Sound, 2nd Edition, 1990.

Scientific Consulting Services. "Archaeological Inventory of Proposed Kailua High School Additional Access," 2005.

State of Hawaii, Office of Environmental Quality Control. "A Guidebook for the Hawaii State Environmental Review Process," June, 2004.

Sterling, Elspeth P. and Catherine C. Summers (comp.). 1978. *Sites of O`ahu*, Department of Anthropology, B.P. Bishop Museum, Honolulu, HI.

United States Architectural and Transportation Barriers Compliance Board. "Americans with Disabilities Act Accessibility Guidelines" (ADAAG) section 1-10, published September 1994.

United States Architectural and Transportation Barriers Compliance Board. "Building a True Community - Final Report - Pubic Rights-of-Way Access Advisory Committee," published January 10, 2001.

United States Architectural and Transportation Barriers Compliance Board. 36 CFR Parts 1190 and 1191 Part II "Americans with Disabilities Act (ADA) Accessibility

Guidelines for Buildings and Facilities: Architectural Barriers Act (ABA) Accessibility Guidelines; Final Rule," published July 23, 2004. United States

United States Department of Transportation, Federal Highway Administration, *Visual Impact Assessment for Highway Projects*, Publication No. FHWA-HI-88-054.

United States Government, Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972.

United States Government, Department of the Army, the Air Force, and the Navy, Noise and Vibration Control for Mechanical Equipment, December 1983.

United States Government, Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C., About Sound, May 1976.

United States Government, Federal Emergency Management Agency, National Flood Insurance Program, “Flood Insurance Rate Map, City and County of Honolulu, Panel Number 150001-0090-C”, September 28, 1990.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

CHAPTER 9.0
LIST OF ACRONYMS

APE	Area of Potential Effect
BWS	Board of Water Supply
BMP	Best Management Practice
CDP	Census Designated Place
CRA	Cultural Resource Assessment
CZM	Coastal Zone Management
DA	Department of Army
DAGS	Department of Accounting and General Services
DEA	Draft Environmental Assessment
DOE	Department of Education
DOH	Department of Health
DP	Development Plan
PSD	Department of Public Safety
DTS	Department of Transportation Services
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement

FEIS	Final Environmental Impact Statement
HAR	Hawaii Administrative Rules
HCS	High Capacity Software
HFD	Honolulu Fire Department
HRS	Hawaii Revised Statutes
HYCF	Hawaii Youth Correctional Facility
KHS	Kailua High School
PUC	Primary Urban Center
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
PB	Parsons Brinckerhoff
SCS	Scientific Consulting Services
SHPD	State Historic Preservation Division
WCCC	Women's Community Correctional Center

APPENDIX A

SCS Project Number 545-1

AN ARCHAEOLOGICAL INVENTORY SURVEY OF APPROXIMATELY 25 ACRES IN KAILUA AHUPUA`A, KO`OLAUPOKO DISTRICT, O`AHU, HAWAI`I [TMK: (1) 4-2-003: 004 (POR.) & 022 (POR.)]

Prepared by:
Lauren Morawski, B.A.
and
Christopher M. Monahan, Ph.D.
September 2005

Prepared for:
Parsons Brinckerhoff
1001 Bishop Street, Suite 2400
Honolulu Hawai`i 96813

ABSTRACT

Archaeological Inventory Survey was conducted on approximately 25 acres within the *ahupua`a* of Kailua, Ko`olaupoko District, O`ahu Island, Hawai`i [TMK: (1) 4-2-003: 004 (por.) & 022 (por.)]. The Inventory Survey consisted of historical background and archival research; pedestrian survey of the parcel; mapping and description of surface features; and, analysis, interpretation, and reporting of all relevant data. Two archaeological sites were identified. Temporary Site #1 is a lithic scatter, located on an eroded ridge top near the southeast corner of the project area. This site is a Pre-Contact lithic procurement area, with small amounts of crypto-crystalline silicate and volcanic glass debitage located on the ground surface. Temporary Site #2 is an Historic water-flow control structure, now completely abandoned, but once part of a pipeline-tunnel shown on USGS quadrangle maps. This site consists of two main features: Feature 1 is a rectangular construction of large, hand-shaped, basalt blocks, stacked with mortar/concrete. A large out-flow pipe is located at the base of the downslope-side of the feature. Feature 2 consists of a concrete-encased valve station, adjacent to the main structure. No testing (excavation) was conducted in the project area.

TABLE OF CONTENTS

ABSTRACT II

TABLE OF CONTENTS III

LIST OF FIGURES IV

INTRODUCTION 1

ENVIRONMENTAL SETTING 5
- PROJECT AREA DESCRIPTION AND LOCATION 5
- SOILS 5
- VEGETATION 5
- CLIMATE 7

TRADITIONAL AND HISTORIC SETTING 7
- NATURAL RESOURCES OF KAILUA 8
- LEGENDS AND ORAL HISTORY ON TRADITIONAL KAILUA 8
- POST-CONTACT HISTORY AND CHANGES IN LAND TENURE OF KAILUA 13

PREVIOUS ARCHAEOLOGY 16

EXPECTED FINDINGS 18

METHODOLOGY 18
- ARCHIVAL METHODS 18
- FIELD METHODS 18
- CONSULTATION 19
- LABORATORY METHODS 19

RESULTS 19
- OVERVIEW 19
- TEMPORARY SITE 1 21
- TEMPORARY SITE 2 23

SIGNIFICANCE ASSESSMENTS 27

RECOMMENDATIONS 28

REFERENCES 29

LIST OF FIGURES

Figure 1: USGS Mōkapu Quadrangle Map Showing Project Area. 2
Figure 2: Tax Map Key [TMK] Showing Project Area. 3
Figure 3: Aerial Plan View Map Showing Project Area. 4
Figure 4: Map Showing *`Ili* Land Divisions of Kailua Ahupua`a, From Jonn M. Donn, 1902, Hawai`i Territory Survey (Kelly and Nakamura 1981). 15
Figure 5: "Avenue of *Tī*", Facing East-southeast. 20
Figure 6: Overview of TS-1, Facing North. Pink Flags Mark Surface Finds. 21
Figure 7: Plan View of TS-1. 22
Figure 8: TS-2, Feature 1. Facing South-southeast. 23
Figure 9: Plan View of TS-2. 24
Figure 10: TS-2, Feature 2. Facing South-southeast. 25
Figure 11: TS-2, Showing Collapsed Tunnel. Facing South-southeast. 25

INTRODUCTION

At the request of Parsons Brinckerhoff, Inc., Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey on approximately 25 acres within the *ahupua`a* of Kailua, Ko`olaupoko District, O`ahu Island, Hawai`i [TMK: (1) 4-2-003: 004 (por.) & 022 (por.)] (Figures 1 and 2). The Inventory Survey consisted of historical background and archival research; pedestrian survey of the parcel; mapping and description of surface features; and, analysis, interpretation, and reporting of all relevant data. Given the relatively low potential for finding significant subsurface deposits in the Area of Potential Effect (APE), no testing (excavation) was conducted. Fieldwork was conducted by Christopher M. Monahan, Ph.D., and Guerin Tome, B.A., on July 20–22, 2005. Monahan was the Project Director. Robert L. Spear, Ph.D., is the Principal Investigator.

Archaeological Inventory Survey was conducted in order to determine the presence/absence of archaeological sites within the APE for the proposed new access road to Kailua High School. No previous archaeological studies had been conducted in the project area. The proposed roadway will connect Kailua High School with the Kalanianaole Highway, in order to alleviate traffic congestion in the Pōhākupu community. The specific objectives of the Inventory Survey were to determine if significant archaeological sites occurred on the parcel, and to provide significance assessments and recommendations to the State Historic Preservation Division (SHPD), in accordance with legal statutes and administrative rules of the State of Hawai`i. Prior to the Inventory Survey described herein, no previous archaeological work had taken place within the APE.

Two archaeological sites were identified and recorded during the survey (Figure 3). Temporary Site #1 (TS-1) is located just outside of the boundaries of the APE, on an eroded ridge top near the southeast corner of the project area. TS-1 is interpreted as a Pre-Contact lithic procurement site, with small amounts of crypto-crystalline silicate (CCS) and volcanic glass debitage located on the ground surface. Temporary Site #2 (TS-2), an Historic water-flow control structure, is located within the APE, in the northern half of the project area. TS-2 appears to be part of a pipeline-tunnel shown on USGS quadrangle maps (see Figure 1). TS-2 consists of two main features: a rectangular construction of large, hand-shaped, basalt blocks, stacked with mortar/concrete (Feature 1), and a concrete-encased valve/pumping station (Feature 2), adjacent to the main structure. The site appears to date from the plantation era, when water from the Kawainui Marsh was diverted to the Waimānalo and Kāne`ohe areas for commercial agriculture.



Figure 1: USGS Mōkapu Quadrangle Map Showing Project Area.

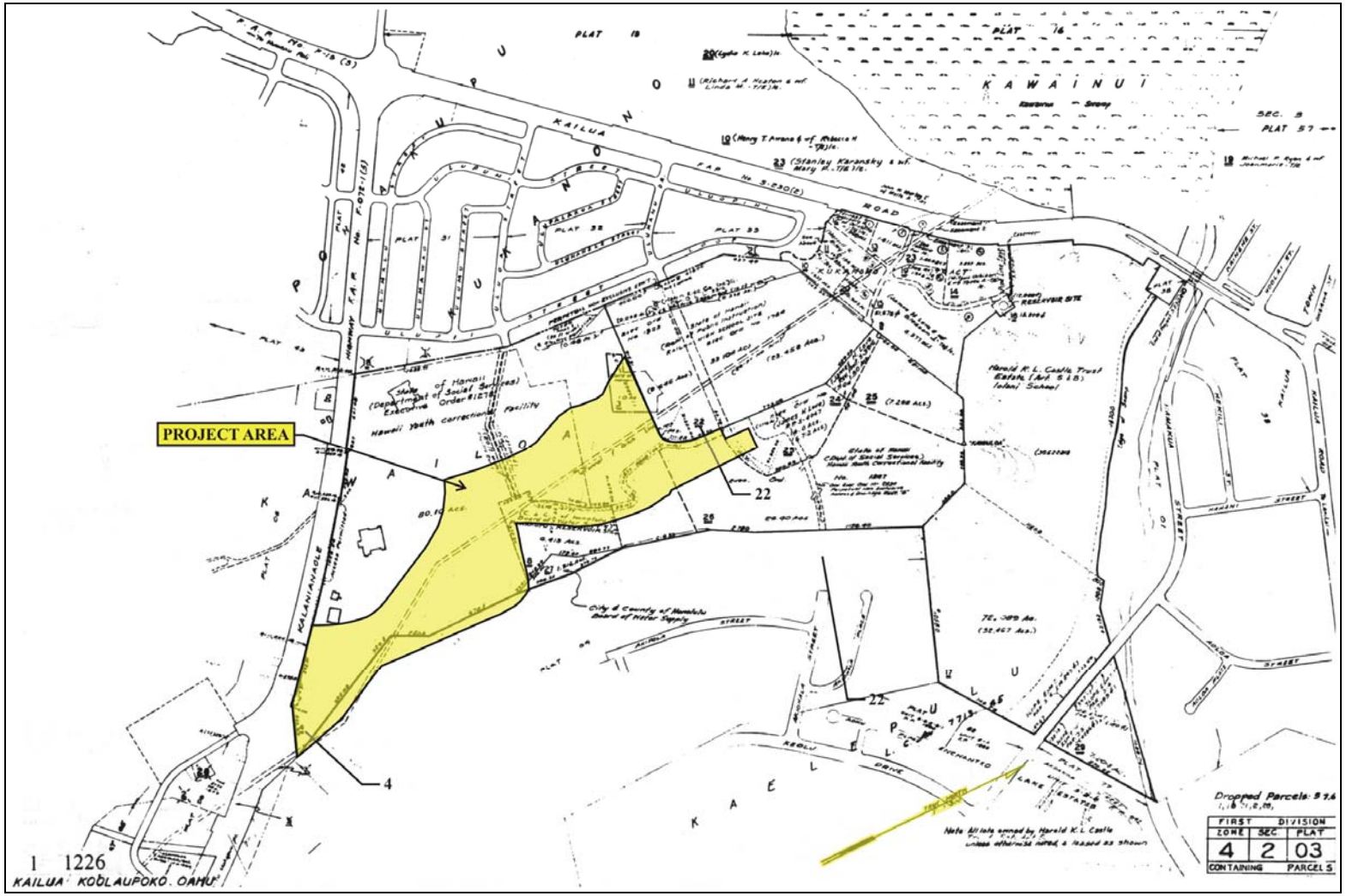


Figure 2: Tax Map Key [TMK] Showing Project Area.

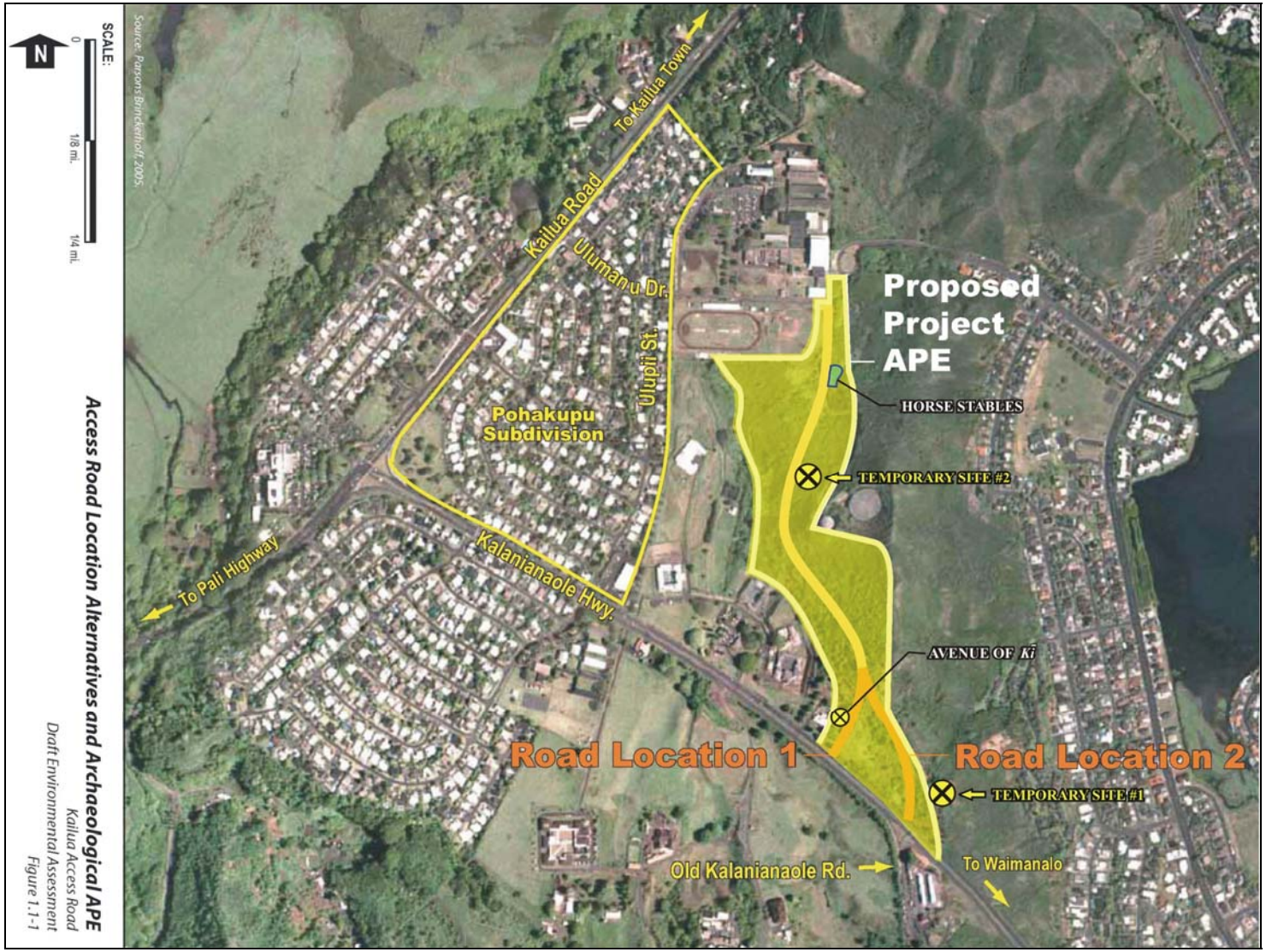


Figure 3: Aerial Plan View Map Showing Project Area.

ENVIRONMENTAL SETTING

PROJECT AREA DESCRIPTION AND LOCATION

The project area, defined as the APE by the client, consists of portions of two parcels (004 & 022) within TMK: (1) 4-2-003, in the *`ili* of Kawailoa, *ahupua`a* of Kailua, Ko`olaupoko District, O`ahu. The APE consists of approximately 25 acres of land encompassing two alternative road corridors connecting the southeastern corner of the Kailua High School campus with the Kalanianaole Highway (See Figure 3). The project area is located on the northeast (windward) side of O`ahu, east (downslope) of the base of the Ko`olau Mountains. The APE is located on the western side of the west-facing Kawailoa Ridge. This ridge is oriented roughly north-to-south, and it is located between the important landmarks of Olomana, to the south, and Pu`u O Ehu, to the north. Kawailoa Ridge, itself, separates the areas of Ka`elepulu Pond (to the east) and Kawainui Marsh (to the northeast). Many of these geographic features were important traditional cultural places, as discussed further in the report.

Elevation in the APE varies from 50–90 m (160–300 ft.) above mean annual sea level, and is generally higher in the east and south, and lower in the west and north. As stated above, the USGS Mōkapu Quadrangle Map (see Figure 1) shows a water pipeline and tunnel traversing the project area, from the southern half, where it is shown as a tunnel (dashed lines), to the northern half, where it is shown as a pipeline (solid lines). TS-2 (see above) appears to represent the transition from the tunnel portion of the water conduit to the pipeline portion. As discussed in the Results section (below), no evidence of the pipeline was observed on the ground surface.

SOILS

Soils in the project area consist of a variety of silty clays, silty clay loams, and clays that typically form on steep lands (Foote *et al.* 1972: Sheet 65). At least seven named soils occur within the APE, but three soils make up almost all of this area: Alaeloa silty clay (AeE), which occurs on moderate- to steeply-sloping (15–35%) uplands, another type of Alaeloa silty clay (ALF), which occurs on steeply- to very steeply-sloping (40–70%) uplands, and Papaa clay (PYD), which occurs on steeply-sloping to very steeply-sloping land (35–70%). The nearest area of Jaucas sand, commonly found to contain burials throughout the Hawaiian Islands, is located north of the APE, immediately northeast of the Kawainui Marsh.

VEGETATION

This part of O`ahu is classified as a 'Lantana-*koa haole* shrub' Vegetation Zone, and common plants in this zone include: lantana (*Lantana camera*), *koa haole* (or, *haole koa*)

(*Leucaena leucocephala*), klu (also *kolū*) (*Acacia farnesiana*), *pānini* (also prickly pear) (*Opuntia ficus*), *`ilima* (*Sida fallax*), and Natal redtop grass (*Rhynchelytrum repens*) (Armstrong 1983; Wagner *et al.* 1990). Of these, only *`ilima* is a Native Hawaiian species. Its flowers are traditionally used to make *lei* (*cf.* Abbott 1992).

Most of the project area is covered in extremely dense vegetation, dominated by introduced trees and shrubs, and a large number and variety of invasive weeds. Four plants of Hawaiian origins were observed on the parcel: *'ūlei* (*Osteomeles anthyllidifolia*), *uhaloa* (*Waltheria indica*), *tī* (or, *kī*) (*Cordyline fruticosa*), and *hau* (*Hibiscus tiliaceus*). Traditional uses of these plants include:

- *Hau*—According to Krauss (1974:111), "Hau was very highly valued and highly regarded. No commoner could cut any hau branches without gaining permission from chief." Used for various types of cordage, wood tools, medicine, and others.

- *'Ūlei*—This plant was used to make *lei wili* (*i.e.,* 'twisted' *lei*, using multiple strands). According to Abbott (1992:84), "Scoop net handles and closures were frequently made from the endemic shrub *'ūlei* … whose spreading branches can be easily bent into loops."

- *Ūhaloa*—According to Abbott (1992:101), various portions of this weed were "pounded, strained, and used as a gargle for sore throat."

- *Tī (Kī)*—This plant has a great deal of spiritual significance for contemporary Native Hawaiians, and this has probably been so for many centuries. Leaves were used for rain gear (capes and hats), food preparation and presentation, and to mark important ceremonial space (certain *heiau*) and individuals (*e.g.,* some *kahuna*).

Introduced taxa identified in the project area include: bitter gourd (*Momordica charantia*), Chinese violet (*Asystasia gangetica*), Christmasberry (*Schinus terebinthifolius*), coral berry (*Rivina humilis*), cow pea (*Macroptilium lathyroides*), fiddlewood (*Citharexylum caudatum*), guava (*Psidium* spp.), Indian pluchea (*Pluchea indica*), indigo (*Indigofera suffruticosa*), ivy gourd (*Coccinia grandis*), Jamaica vervain (or, *oī*) (*Stachytarpheta jamaicensis*), *koa haole* (or, *haole koa*) (*Leucaena leucocephala*), lantana (*Lantana camera*), mango (*Mangifera* spp.), moluccana albizia (*Paraserianthes falcataria*), Monkeypod (*Samanea saman*), morning glory (*Ipomoea obscura*), partridge pea (*Chamaecrista nictitans*), pothos vine

(*Epipremnum pinnatum*), prickly sida (*Sida spinosa*), prickly solanum (*Solanum torvum*), shower tree (*Cassia* spp.), sleeping grass (*Mimosa pudica*), slender mimosa (*Desmanthus virgatus*), snake plant (*Sanseviera trifasciata*), sweet acacia (*Acacia fernesiana*), umbrella grass (*Cyperus latifolia*), wedelia (*Wedelia trilobata*), and other unidentified weeds and grasses.

CLIMATE

Given its windward location, the project area is moderately wet. Armstrong (1983) reports a mean annual rainfall of approximately 100–115 cm (40–45 in.). *Median* annual rainfall data from Giambelluca *et al.* (1986) place the project area between the 100 cm (40 in.) and 150 cm (60 in.) isohyets. Significantly greater amounts of rainfall occur in the mountains located just west of the project area, in excess of 250 cm (100 in.). Some of this additional through-flowing water may have been available in Pre-Contact and earlier Historic times, in the small drainage running along the western boundary of portions of the APE.

TRADITIONAL AND HISTORIC SETTING

Historical and cultural background studies of the Kailua Ahupua`a have been conducted by a variety of cultural specialists, historians and archaeologists. We are fortunate that preservations fought to retain Kawainui as a natural area, because this has resulted in a wealth of important cultural and historical studies. Muriel Seto chaired an enormous effort to create Hawai`i's Thousand Friends, where she was the Chair of Culture. Through her dedicated actions, Kawainui Marsh was designated on the Ramsar List of Wetlands of International Importance. Primarily due to her efforts we have a broad base of educational resources and a historical background drawn from a variety of oral and ethnographic sources. Few other areas in the Hawaiian Islands have as many landforms named for sacred persons and events as does Kailua (Drigot and Seto 1982).

Diane Drigot and Murial Seto collaborated on *Ho`ona`auao No Kawai Nui*, an extensive educational resource guide about the various environments that make up Kawainui. This source includes cultural analysis of Hawaiian *mele* and *oli* (chants) written about Kawainui. In 1980, Marion Kelly and Jeffery Clark produced, *Kawainui Marsh, O`ahu: Historical and Archaeological Studies.* And in 1981, Marion Kelly and Barry Nakamura produced *Historical Study of Kawainui Marsh Area, Island of O`ahu*. Victoria Creed and Rodney Chiogioji authored a report with special emphasis on the history of named places in Maunawili Valley and Kailua Ahupua`a, including many interesting anecdotes and sources.

NATURAL RESOURCES OF KAILUA

Kailua Ahupua`a is the largest valley on the windward coast and the largest ahupua`a in the Ko`olaupoko District. Kailua Ahupua`a is situated between Waimānalo Ahupua`a, to the southeast, and Kāne`ohe, to the north and west. Compared with other areas of O`ahu and the Hawaiian Islands, in general, Kailua Ahupua`a has been blessed with an abundant and diverse set of natural resources. Large extensive sandy beaches front the *makai* portion of the *ahupua`a.* The extensive reef environment and nearby offshore islands, including Mōkōlea and the Mokuluas, provide additional resource gathering environments. Two extensive inland freshwater areas, Kawainui Marsh and Ka`elepulu Pond, exist inland from the coast. Kawainui Marsh and Ka`elepulu Pond, along with 18 permanent and freshwater streams, provided an abundance of ecologically diverse environments. Mount Olomana (1,643 feet) dominates the landscape in the central portion of the *ahupua`a*. Other low ridgelines and gulches exist in the central portion southern half of the *ahupua`a*. The massive cliffs of the Ko`olau uplands of Maunawili provide a natural barrier to Honolulu District as well as an extensive upland mountain environment. These mountains would have been important raw material sources in ancient times, containing diverse and numerous lithics (for making stone tools), medicinal plants, and hardwoods.

Kailua Ahupua`a supported one of the largest Pre-Contact populations in O`ahu, and possibly in the Hawaiian Islands, due its favorable physiographic setting. Access to abundant fresh water, to coastal environments, to the mountains, and to large areas amenable to both agriculture and habitation, made Kailua a favorite place for members of the Ali`i class as well as the *maka`āinana* (commoners). Kailua was known as a favorite place for the Ali`i to visit and recreate. Large agricultural systems provided *kalo* (taro) and a variety of other crops such as *mai`a* (banana) and *`uala* (sweet potato). Fish were farmed in abundance in the two large natural *loko i`a* (fishponds) Kawainui and Ka`elepulu, along with the numerous fortified fishponds that were constructed along the shoreline and inland areas of Kawainui. The extensive *kai lawai`a* (fishery) of Kailua Bay and the offshore islands provided a patchwork of ocean resource zones that extended a mile offshore from the beaches of Oneawa and Kailua Bay.

LEGENDS AND ORAL HISTORY ON TRADITIONAL KAILUA

There are many important legends associated with the environs of Kailua Ahupua`a. Pukui, Elbert and Mookini provide “two seas” as the literal translation of Kailua in Place Names of Hawai`i (1974). Many important legends center around Kawainui and Ka`elepulu, as well as the peak of Olomana, Mōkapu Peninsula and Alāla Point (*i.e.,* the high point-lookout between Kailua Beach and Lanikai). Themes of voyaging, creation, fertility and genealogical ties to ancestor gods are mentioned repeatedly throughout the legends. One well-known legend involved the creation of the first man (Kanehulihonua) and woman (Keakahulilani) by the gods

Kāne, Kū and Lono at Mōkapu. There are many legends involving the famous Ali`i Olopana who is remembered as residing in Kailua. Well remembered and recorded in *oli* and *mo`olelo* are many historic episodes involving Olopana who, with his brother Kahikiula came to O`ahu from Kahiki and settled in Kailua with his wife Hina. Olopana is credited with the establishment of Pahukini and Holomakani Heiau near Kawainui, and with other *heiau* throughout Ko`olaupoko. Hina and Kahikuila, Olopana's brother, gave birth to Kamapua`a whose capture, escape, and subsequent rebellions against his *`anakala* (uncle) resulted in Olopana's eventual death and Kamapua`a's subsequent return to Kahiki (Fornander 1969). The development of Kamapua`a into one of Hawai`i's preeminent legendary figures, following his exploits with Olopana and his tumultuous love affair with Pele, were documented by numerous sources in the past. Some epics were written as segments in Hawaiian Language newspaper that lasted over a year. The significance of these legends is paramount and this is evidenced by the continued interest as versions of these events continue to be translated. These legends are primary sources of insight into traditional Hawaiian epistemologies, and their connection to specific places within the Hawaiian landscape are immeasurably valuable.

In *Ho`ona`auao No Kawai Nui,* Drigot and Seto (1982) describe some of the numerous mele and oli (chants) that were composed describing the fishponds Kawainui and Ka`elepulu. These chants describe the environment and relationships between people and the land. These chants tell of the *mo`o akua* ('lizard god' 'dragon') or the *mo`o* goddesses Hauwahine and Haumea, who were respected guardians of the land; these goddesses protected and nourished the Kailua fishponds, which were known for their production of mullet and *awa* (milkfish). These *mo`o* goddesses were said to reside on the ridge between Olomana and Pu`u O Ehu; *i.e.,* in and around the APE. There are numerous legends describing the *mo`o* goddesses of Kawainui Hauwahine. For example, Hauwahine is referred to in the epic *Hiiakaikapoliopele* by Hiiaka as the guardian of Kawainui. Her ability to take the forms of a *mo`o* and a woman allude to her supernatural powers.

On the banks of Kawainui stood the great fish-attracting tree or stick named Makalei, which brought prosperity to the people who honored and respected the tree; and, to the creator goddess Haumea, who brought the tree from Paliuli, Hilo Hawai`i Island. Haumea, as discussed by Kamakau in *Ke Au Okoa*, is reborn in different lands and in different forms, one of which is the famous fire goddess Pele. In *Hawaiian Mythology*, Martha Beckwith (1970) discusses Haumea as associated with themes surrounding food supplies for the life of man and marriages and births for the increase of healthy family populations. The Makelei tree/stick is associated with a source of a never-ending supply of food. If treated properly, this tree/stick will feed and

nourish the Hawaiian people, and allow for healthy, fertile populations. In *Sites of O`ahu* (1978), Elspeth Sterling and Catherine Summers discuss the circumstances that arose when the keeper of the pond did not abide by the principles of the Makalei tree/stick. The food supply was cut off until reparations were made and balance restored to the environment. According to Beckwith (1970), in the *Kumulipo* version of this legend, Haumea is referred to as a genealogical link to the ancestor gods. Her role as midwife to Olopona's daughter (Muleiula) and her status as patroness of painless childbirth is connected to the bringing of these gods and certain chiefly lineages to O`ahu (*ibid.*). The Makalei tree or branch is also symbolic of the ability to produce healthy offspring of strong stock; thus, providing longevity and continuity to the genealogic line (*ibid.*).

Other well-known traditions about the ample productivity of the Kailua region and its ability to nourish the Hawaiian people include the legend of the *lepo `ai `ia* (edible mud). This *lepo `ai `ia*, which was brought to Kawainui by the famous voyager Ali`i Kaulaakalana from Kahiki, was served as a substitute for *poi* to Kamehameha's warriors during a time of *kalo* shortage in Kailua Ahupua`a (Sterling and Summers 1978:231-232). Protocols surrounding the procurement of the mud included inappropriate speech, which would result in the death of the harvester. Informants provided descriptions of the mud; it was found only in Kawainui, it was thick and jelly-like, like *haupia* pudding in texture but the color of *poi*.

Kailua Ahupua`a also has strong connections to the legends of the well-known *menehune*, the race of "little people" who built monumental structures (*e.g.,* fishponds and *heiau*) at night for the Hawaiians.[1] The *menehune* have been credited with the construction of Ulupō Heiau, one of the largest structures on the Windward side of O`ahu. Ulupō Heiau is located on the Kāne`ohe (north) side of Kailua Road, just *makai* (east) of Castle Junction. It is located near the head of the former Kawainui fishpond (McAllister, in Sterling and Summers 1978:232). According to Kirch (1996:32), "[a]lthough not the largest temple site on O`ahu in terms of area … Ulupō ("night inspiration") may be the greatest in terms of the sheer mass and volume of stones used in its construction." During McAllister's visit to Ulupō, an elderly Hawaiian man named Mahoe pointed out to him a narrow pathway on the northwest corner called the "*menehune* pathway" that led from the spring. An informant named Akuni Ahau told Sterling that this was the spring in which the sacrificial pigs were washed prior to bringing them up to the temple oven of Ulupō.

[1] There are interesting alternative interpretations of the *menehune legends; including the idea that the term was initially mistranslated (or incompletely understood), and that the word-concept is actually closer to "commoner" or maka`āinana* than it is to mythical entities.

Many famous *ali`i* were known to reside in Kailua and to come to Kailua to visit and recreate. In addition to the aforementioned famous Olopana, Kākuhihewa was said to reside at `Ālele, which refers to central Kailua, a flat plain previously known as Kula o `Ālele (Fornander 1969, Volume 2:274). Fornander described the Kākuhihwea residence at Kailua as one of three (Kākuhihwea) royal residences (Waikiki and `Ewa being the other two). He described the residence, named Pāmoa, as a large house but not as overtly large as past residences of lesser chiefs. He estimated that Kākuhihewa lived in the last half of the 16th century. Kamakau's (1991:69) description of Kākuhihewa's residence suggests a wide variety of games and other activities took place here:

> At `Ālele in Kailua he built his "government house", *Hale Aupuni*. It was forty *anana* long and fifteen *anana* wide: Pāmoa was its name. All these were done here: storytelling, distribution of lands, recalling traditions of the ancestors, reciting of genealogies, practicing of battle skills, wielding of war clubs, thrusting of spears, observation of omens, study of land features, study of stars, playing *kōnane*, learning the *mele* of ancestors and chiefs, running, learning to leap from cliffs, *maika* rolling, dart throwing, boxing, hand wrestling, sitting wrestling, shoulder wrestling, hand to hand fighting, all kinds of sports that strengthened the body, cultivating and fishing.

Other chiefs known to reside in Kailua include Kūali`i, whose *piko*-cutting ceremony occurred at the *heiau* of `Ālala, and the sacred drums of Opuku and Hāwea were used at the *heiau* to announce the event to people (Fornander and Sterling, in Kelly and Nakamura 1981). Kūali`i is remembered as leading many battles in his quest as *mō`ī* (supreme ruler) of O`ahu. He and his forces battled rival chiefs in O`ahu, as well as voyaging to other battles, collecting additional allied warriors, and aiding in the battles of other chiefs with whom he was aligned on other islands (Fornander 1969, Volume 2: 280-282). Kūali`i was known to reside in both Kailua and Kualoa, but preferred Kailua, where he died at an advanced age. Fornander explains the extent to which Kūali`i went to conceal his bones after his death. Before his death he entrusted his dearest *kahu* ('attendant' or 'guardian') to attend to his funerary arrangements. After his death and the subsequent defleshing and preparation of his *iwi* (bones) for concealment, which was done to avoid access and desecration by mortal men, Kūali`i 's trusted *kahu* secretly ground the *iwi* into a fine powder. Afterwards he announced that a great feast must be prepared to honor Kūali`i, and chiefs from far and near were invited to attend. Great preparations were undertaken, and on the arrival of the feast day, the *kahu* secretly mixed the powdered remains into the *poi*

that was served at the feast. When asked if he had carried out his chief's wishes he replied "…he had hidden his masters bones in a hundred living tombs" (Fornander 1969, Volume 2: 284).

The practice and popularity of maintaining a residence in Kailua by other prominent and famous *ali`i* continued into early Post-Contact times. For example, Kelly and Nakamura (1981) report that Kahekili, a paramount chief of Maui, was said to have resided in Kailua in the 1780s, during which time he battled many O`ahu warrior-chiefs, killed Kahahana, and took his place as high *ali`i* of O`ahu (Kelly and Nakamura 1981). During his period of residence in Kailua, Kamehameha I reportedly worked in the fishponds of both Kawainui and Ka`elepulu, in order to encourage and stimulate fishing and the growing of food to feed his warriors brought from Hawai`i to conquer O`ahu in 1795 (Kamakau, in Kelly and Nakamura 1981). In the 1870s, Queen Lili`uokalani was said to reside at Maunawili at the Boyd Estate. According to Brennan (2000), "[s]he would come on the water by way of Waimānalo. And then the carriage pulled by horses would bring her into Maunawili. And Maunawii was the place where she chose to rest and recuperate." The Queen composed the famous love song *Aloha `Oe*, which describes the natural beauty and resources of Maunawili (Kailua Historical Society 2005).

Ethnographic information provided by Handy and Handy (1972) mentions the time of Kūali`i in Kailua. Kailua, they state, "…was the home of the *ali`i* Kūali`i in the early 18$^{th}$ century, and presumably had been the seat of high chiefs of Ko`olaupoko from very early times" (1972:457). The authors highlight the favorable living conditions in Kailua, especially the wide habitation plain not found in neighboring Kāne`ohe and Waimānalo Ahupua`a, and the extensive and rich farmlands located between the seashore and the mountains. Handy and Handy note the extensive, natural fishponds of Kawainui and Ka`elepulu, and specifically mention a complex of artificial fishponds along the coast between Kailua and Kāne`ohe. These ponds, located in the Mōkapu area, are known as Halelou, Nu`upia and Kaluapuhi.

Kailua also contained one of the most extensive terraced areas on O`ahu. This terrace system extended one and a half miles inland from Kawainui. Additional terraces extended up in all the valleys towards the *mauka* extent of Kailua Ahupua`a. Extensive terraces systems were constructed and watered by various springs and a small stream descending from Olomana that ran along the western slope of the ridge that lies southeast of Kawainui. Other terrace systems, which extended eastward from the *makai* end of this ridge, were watered by a stream that feeds Kawanui and Ka`elepulu. Additional terraces systems existed north of Kawainui and east of Ka`elepulu (Handy and Handy 1972:457).

Interestingly, early population estimates of Kailua do not suggest a particularly large resident population, given its fertile and productive reputation. Inconclusive population counts tabulated in the 1830s provided a figure of 760 individuals residing in Kailua (Schmitt 1973). This low population estimate must reflect for the toll that European-introduced disease had on traditional Hawaiian populations in all the islands. Westerners noted the rampant colds and flu among the Hawaiians of the Ko`olaupoko District and attributed the amount of abandoned agricultural areas to lack of healthy residents (Wyllie, in Kelly and Nakamura 1981:10).

POST-CONTACT HISTORY AND CHANGES IN LAND TENURE OF KAILUA

Historic accounts of Kailua directly after contact are limited, and while great changes were occurring in land use practices, little written documentation exists to create a precise timeline. Levi Chamberlain, a missionary who traveled around the islands in 1828 to inspect the conditions of the mission schools, recorded one of the only written accounts. On approaching and passing through Kailua he recorded his interpretations of Kawainui:

> Here at Kailua we found a small school under the care of a female not very well qualified for an instructor. Kailua is a large district and the schools of which there are several, have on former examinations, made a very good appearance. At the present time, most of the males are absent procuring house timber for Kaleohano, the proprietor of the district.
>
> Directing our course towards Kaneohe, the next district, we were obliged to pass over a tract of land mostly overflowed with water from the late rains. Here I was obliged to wade, as the distance was too great to admit of my being carried on the shoulders of my attendants, as was generally the case in passing a small stream of water. After emerging from the flat, our path was not improved, for we had now to walk through mud instead of water—we walked some distance along the steep hill, and at length by a winding path ascended to the top of it. We sat down to rest for a few minutes, and I found myself upon the summit of a ridge extending from the mountains in a right line to the sea and dividing the low lands of Kailua from those of Kāne`ohe (Chamberlain Ms.:664, in Kelly and Nakamura 1981:7).

Māhele land records provide a component to understanding land use history during the early to mid 1800s. However, due to the fact that many people who had use rights in the land did not register their claims with the Board of Commissioners, the land commission documents represent only a portion of the population that was living on and cultivating the land (Kelly and Nakamura 1981). These authors discussion of land history of Kailua indicates the importance of the *ahupua`a* of Kailua in relation to the individual naming of at least 63 *`ili* (smaller land divisions) within the region (Figure 4). This is compared with to the average of 30 to 40 named *`ili* within larger *ahupua`a* (Lyons, in Kelly and Nakamura 1981). The additional amount of individually-named parcels attests to the importance and value of the lands of Kailua to the

Hawaiians before the *Māhele*. According to the Māhele documents, the *ahupua`a* of Kailua, except for the *`ili* claimed by the king and by other chiefs, was claimed by Kamehameha III to his wife Kalama. In addition to Kalama, forty-one high-ranking chiefs claimed an interest in Kailua Ahupua`a. Kamehameha III kept the *`ili* of Kawailoa (in which the current project area is located) as Crown Lands (Kelly and Nakamura 1981). Kawailoa was an *`ili lele* (essentially a discontinuous piece of land) made up of several parcels located at the coast, along the banks Ka`elepuhu pond and Kawainui, and in the upper reaches of Maunawili Valley.

Land Commission Awards (LCA) for Kailua documented garden areas clustered around all eighteen permanent and perennial streams and in areas of natural springs. These awards consisted mainly of *kalo lo`i*, approximately 1,255 *lo`i* are listed in the LCA records for Kailua Ahupua`a (Kikiloi *et al.* 2000). Other crops included *wauke* (paper mulberry, for making *tapa*, or bark cloth), banana, sugarcane, *`awa* (kava), and *`uala* (sweet potato). Gourds are mentioned within the testimonials describing the boundaries and uses of the *māla* (gardens) of Kailua (Kelly and Nakamura 1981). Additionally, 123 house lots are mentioned in the awards (Kikiloi *et al.* 2000).

During the 100 or so years following the *Māhele*, the agricultural patterns of Kailua were drastically altered. Rice production began in earnest after the initial wave of Chinese immigrants reached Hawai`i. Many of the abandoned *kalo lo`i* in Kailua were converted to rice. Land was rented from farmers not using their lands for rice cultivation, and several mills were constructed (*e.g.,* one was located in the *`ili* of Makali`i). Rice farming began as early as 1789 in Hawai`i (Kelly and Nakamura 1981). Until 1900, rice was the most important crop in Kailua. After 1900, truck-farming of taro and introduced, western crops was most prevalent (*ibid.*). In 1876, the Reciprocity Treaty between the Hawaiian Kingdom and the United States was signed. After the signing of this treaty, the sugar industry in Hawai`i was greatly expanded.

Following this treaty, sugarcane production in Waimānalo underwent great expansion and its reliance on water from Kailua was substantial. By 1878, construction of a complex of flumes, ditches, and tunnels was completed in the *mauka* portions of Maunawili to collect water from streams and springs. This system facilitated the delivery of water to Waimānalo's sugarcane fields. By 1900, this system was 4 ½ miles long, and diverted all of Maunawili's stream water to Waimānalo. In the 1920s, improvements to the existing system were added. This included catchment tunnels excavated into the Ko`olau Mountains to increase water flow (*ibid.*).

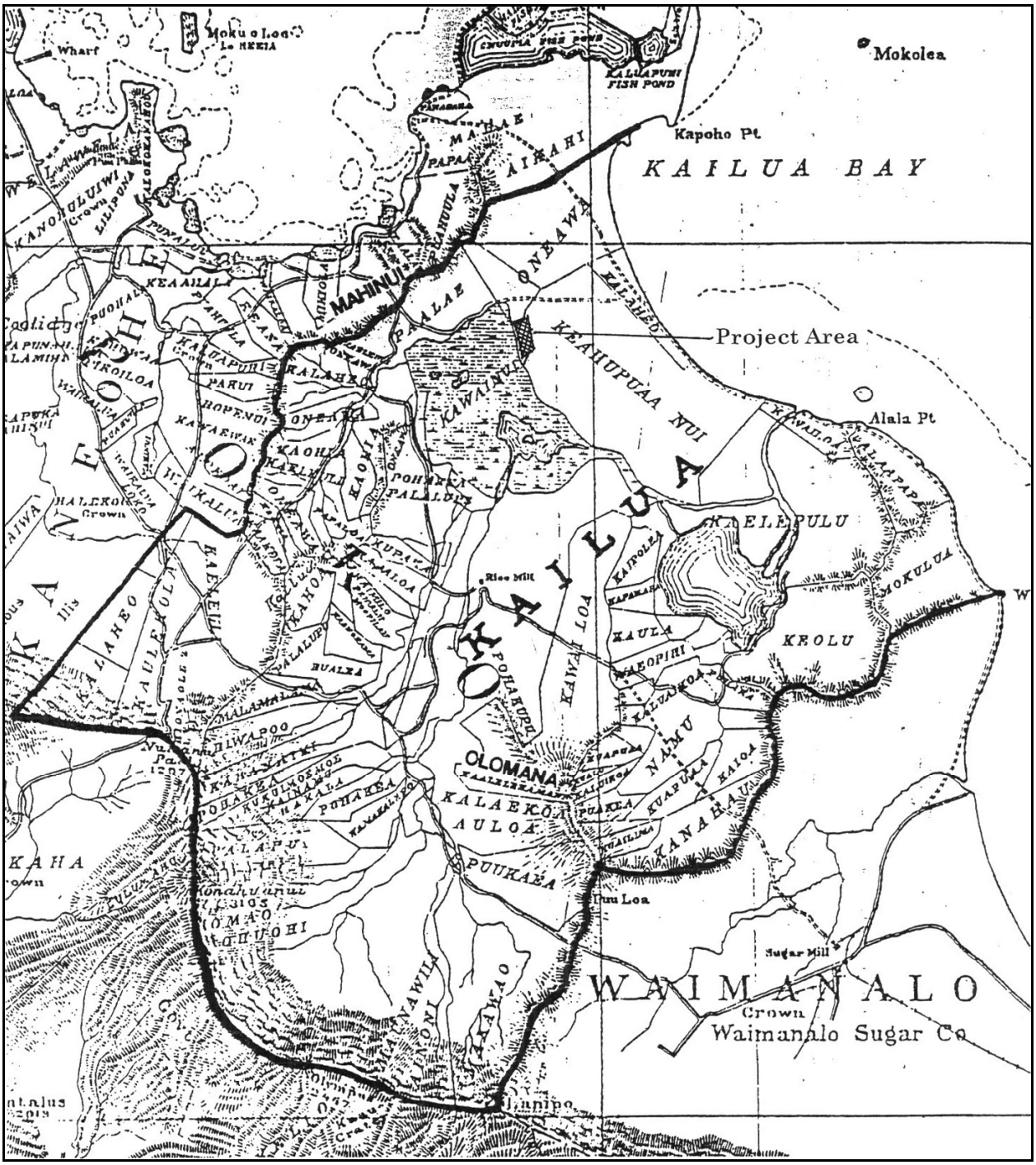


Figure 4: Map Showing *`Ili* Land Divisions of Kailua Ahupua`a, From J.M. Donn, 1902, Hawai`i Territory Survey (Kelly and Nakamura 1981).

In 1923 a system of pumps, pipelines, tunnels, and ditches was completed that pumped water from Kawainui Marsh into the Kailua reservoir, which was part of the Waimānalo Irrigation System. This was used until the early 1950s (*ibid.*). A portion of this infrastructure, a pipeline, runs across Kawailoa ridge, and is shown on the USGS map of Kailua (see Figure 1). TS-2, a water-flow control structure identified during the present study, is most likely associated with this period of water diversion. Use of the Kawainui water rapidly declined after the liquidation of the Waimānalo Sugar Company in 1947 (*ibid.*).

Ranching began in Kailua Ahupua`a in the early 1900s, and the Kaneohe Ranch began to dominate land holdings in the Kailua and Kāne`ohe areas. Cattle, sheep, and horses were pasturing throughout Kailua's open plains landscape. As a result of this, it is likely that cattle grazing destroyed many abandoned gardens and *lo`i*. Kaneohe Ranch (Castle Trust) was also involved in commercial agriculture growing pineapple and sugarcane on its vast land holdings.

By the 1950s truck farming and ranching began to give way to housing, municipal, and commercial development. The realignment of the Pali Highway in 1959 allowed for the advertisement of Kailua as the ultimate "bedroom" community of Honolulu, just 10 miles and 25 minutes (by car) away. Kailua's expansion has continued until the present time.

PREVIOUS ARCHAEOLOGY

Based on past archaeological studies, LCA information, and interviews with Hawaiians at Contact by settlers, Kailua was a thriving community in Pre-Contact times. The bountiful natural resources, environment, and physiography of Kailua Ahupua`a have been summarized at the beginning of the previous section (see TRADITIONAL AND HISTORIC SETTING). In addition, geological studies have confirmed that the caldera of the Ko`olau Volcano (under which Kailua lies) was a basalt quarry, ideal for stone-tool production. Kailua, a populous community favored by *ali`i,* was the center of a large royal complex in the 15th and 16th centuries that included playgrounds for sports and physical training (Sterling and Summers 1978).

The earliest inhabitants of Kailua Ahupua`a likely settled the coasts and near-coastal areas first, then moved to the more *mauka* (inland) areas, in keeping with the typical pattern of the *ahupua`a* resource-acquisition strategies throughout the Hawaiian Islands (Tuggle 1994).

The exact chronology of Windward O`ahu and Kailua's first settlement is debatable (*e.g.,* see Tuggle 1994; Hunt and Holsen 1991; Spriggs and Anderson 1993); however, it was probably

relatively early, compared with other populated areas of the Hawaiian Islands. Early archaeological deposits dating to perhaps as early as A.D. 300 have been reported from Waimānalo (Bellows Site O18) and Kailua (Kawainui Marsh) (Pearson *et al*. 1971; Kirch 1985). A remnant sand dune (Site 1546) along the eastern shore of Kahana Valley has been dated to the eighth century A.D. It is important to note that the earliest dates (A.D. 300) have been challenged not only on technical grounds specific to radiocarbon dating (the "old wood" problem), but also on the basis of palynological (pollen) data. Athens, for example, has argued for an initial settlement of Windward O`ahu of no earlier than *c.* A.D. 900 (Athens 1997).

A conservative interpretation of all available data relevant to the earliest settlement of Windward O`ahu and Kailua would place this event at approximately A.D. 800–900. One radiocarbon date could place Kailua's human habitation as early as A.D 350–650 (Clarke 1980:32), but the majority of the dates come from the 13th and 14th centuries during a period of extensive agricultural use (Allen-Wheeler 1981; Williams *et al*. 1995).

Since Thrum's pioneering study of the island of O`ahu in 1907, countless archaeological studies have been conducted in Kailua. A great variety and number of sites and features have been documented, including agricultural terraces, house platforms, *heiau*, and burials. More than 83 archaeological reports describing finds of burials, temporary and permanent habitation sites, agricultural sites and the like have been filed on this *ahupua`a*, a testament to its importance. However, most of these studies are from the *mauka* regions, because the coast was developed before SHPD rules dictating the preservation and recordation of archaeological sites were implemented. To further compound the problem, in 1909, the Hawaiian Copra Company decided to level the "sand dunes and smooth[ing] out the former dune areas" (Hall 1997:77–78). They also planted 130,000 coconut trees on 200 acres of beach sand, calling the area Coconut Grove. Given the impact of Coconut Grove and heavy residential development, it is unlikely that early sites would be located in these areas.

Although diverse site types have been found in Kailua, a great number of such sites have been burials. Pre-Contact Hawaiians typically buried their ancestors in sand, *i.e.,* in easily-excavated land with no potential agricultural value (Kirch 1985).

No previous archaeological studies had been conducted in the project area.

EXPECTED FINDINGS

Based on all available physiographic, archaeological, and historical evidence, there was a relatively low probability of finding traditional (*i.e.,* Pre-Contact) sites and features in the project area, especially given the relatively steep terrain. Further, there was a relatively low probability of finding burials, since two of the most important physiographic variables typically associated with burials—*i.e.,* dune sand deposits and/or rockshelters or caves—are entirely missing from the project area. We did anticipate finding features associated with the water pipeline shown on USGS maps, as discussed below.

METHODOLOGY

In addition to analysis, interpretation, and preparation of this document, the work described in this Archaeological Inventory Survey consisted of archival research, fieldwork, consultation with the SHPD, and laboratory work. Specifics on all of these research activities are described in detail below.

ARCHIVAL METHODS

In addition to referencing available resources at SCS, archival research was conducted at the SHPD library facility (Kapolei, HI) and on the SHPD website before, during, and after the fieldwork described in this report. Archival work consisted of general research on the history and archaeology of the project area, as well as specific searches of previous archaeological studies in and around the subject parcel. Historic land use data, maps, and narrative information were obtained from published and unpublished sources.

FIELD METHODS

Fieldwork was conducted on July 20–22, 2005, by Christopher M. Monahan, Ph.D., and Guerin Tome, B.A. All aspects of the work were photographed with a digital camera and archived on the SCS computer network. The entire project area was traversed on foot, cutting through extremely dense vegetation in many (or most) of the project area; pedestrian survey consisted of transects, spaced approximately 10 meters apart. Thus, fieldwork resulted in a thorough coverage that was, however, limited by dense ground cover in many places. Sites and features documented in the project area were located on an aerial photograph provided by Parsons Brinckerhoff, Inc., to SCS, using tape and compass methods.

CONSULTATION

A meeting between Monahan, two representatives of Parsons Brinckerhoff, and Ms. Mary Carney (SHPD-Oahu archaeologist) took place at the SHPD, Kapolei, HI, on June 15, 2005. The purpose of the meeting was to describe the objectives and scope of the Inventory Survey, and to gather preliminary impressions from the state archaeologist regarding the project.

LABORATORY METHODS

All significant finds (*i.e.,* portable artifacts over 50 years in age) were transported to the SCS laboratory in Honolulu. These artifacts were catalogued, photographed, analyzed, and interpreted in the laboratory. Laboratory work also consisted of digital drafting of maps and site and feature drawings. The traditional artifacts were analyzed by Dr. Robert L. Spear, President, SCS, Inc. All field notes, maps, photographs, and artifacts pertaining to this project are being curated at the SCS laboratory in Honolulu until further notice.

RESULTS

OVERVIEW

Two archaeological sites were identified and recorded during the survey (see Figure 3). TS-1 is located just outside of the boundaries of the APE, on an eroded ridge top near the southeast corner of the project area. TS-1 is interpreted as a Pre-Contact lithic procurement site, with small amounts of crypto-crystalline silicate (CCS) and volcanic glass debitage located on the ground surface. TS-2, an Historic water-flow control structure, is located within the APE, in the northern half of the project area. TS-2 appears to be part of a pipeline-tunnel shown on USGS quadrangle maps (see Figure 1). TS-2 consists of two main features: a rectangular construction of large, hand-shaped, basalt blocks, stacked with mortar/concrete (Feature 1), and a concrete-encased valve/pumping station (Feature 2), adjacent to the main structure. The site appears to date from the plantation era, when water from the Kawainui Marsh was diverted to the Waimānalo and Kāne`ohe areas for commercial agriculture.

In addition to these sites, which are described in detail below, two other features of interest, but not of historic significance, are worthy of brief mention. First, a small complex of abandoned and ruined horse stables is located in the northern end of the project area. These stables were inspected, and determined not to be of historic age. They likely date from the 1960s or 1970s. Second, a pair of parallel rows of *tī* (*kī*) plants, perhaps planted during a cultural awareness program implemented by the adjacent Women's Correctional Facility, is located in the southwest portion of the project area (Figure 5; see Figure 3). The double row of *tī*, which

altogether consists of some 40–50 individual plants, is approximately 20 m (66 ft.) long and 0.70–1.10 m (2.3–3.6 ft.) wide. While this is not an historic site, it should be respected as a culturally-sensitive site, one that certainly should not be bulldozed.



Figure 5: "Avenue of *Tī*", Facing East-southeast.

TEMPORARY SITE 1

TS-1 is lithic scatter on an exposed and eroded ground surface area near the top of the ridge, near the lower, southeast corner of the project area (Figures 6 and 7). As stated above, TS-1 is located outside of the APE, but it is close enough to justify recording and documentation. TS-1 occupies a total area of some 10.0 m (33 ft.) by 8.5 m (28 ft.). TS-1 is interpreted as a lithic procurement site, similar to a stone quarry, but, in this case, much too sparse to warrant such a designation. The lithics have been eroded out of the intact (vegetated) ground surface located to the west of most of the finds.

Six pieces of CCS debitage and seven pieces of volcanic glass debitage were collected from the surface of the site. The CCS material was analyzed by Bob Spear, and consisted of one interior flake and five non-diagnostic flakes. One piece of the CCS material consisted of a large angular chunk, a common by-product of stone tool procurement areas. The volcanic glass debitage consisted of one interior flake, two secondary flakes, and four non-diagnostic flakes. Both of these materials naturally occur in basalt in the Hawaiian Islands, and both of these materials appear to have been procured from eroding bedrock at TS-1.



Figure 6: Overview of TS-1, Facing North. Pink Flags Mark Surface Finds.

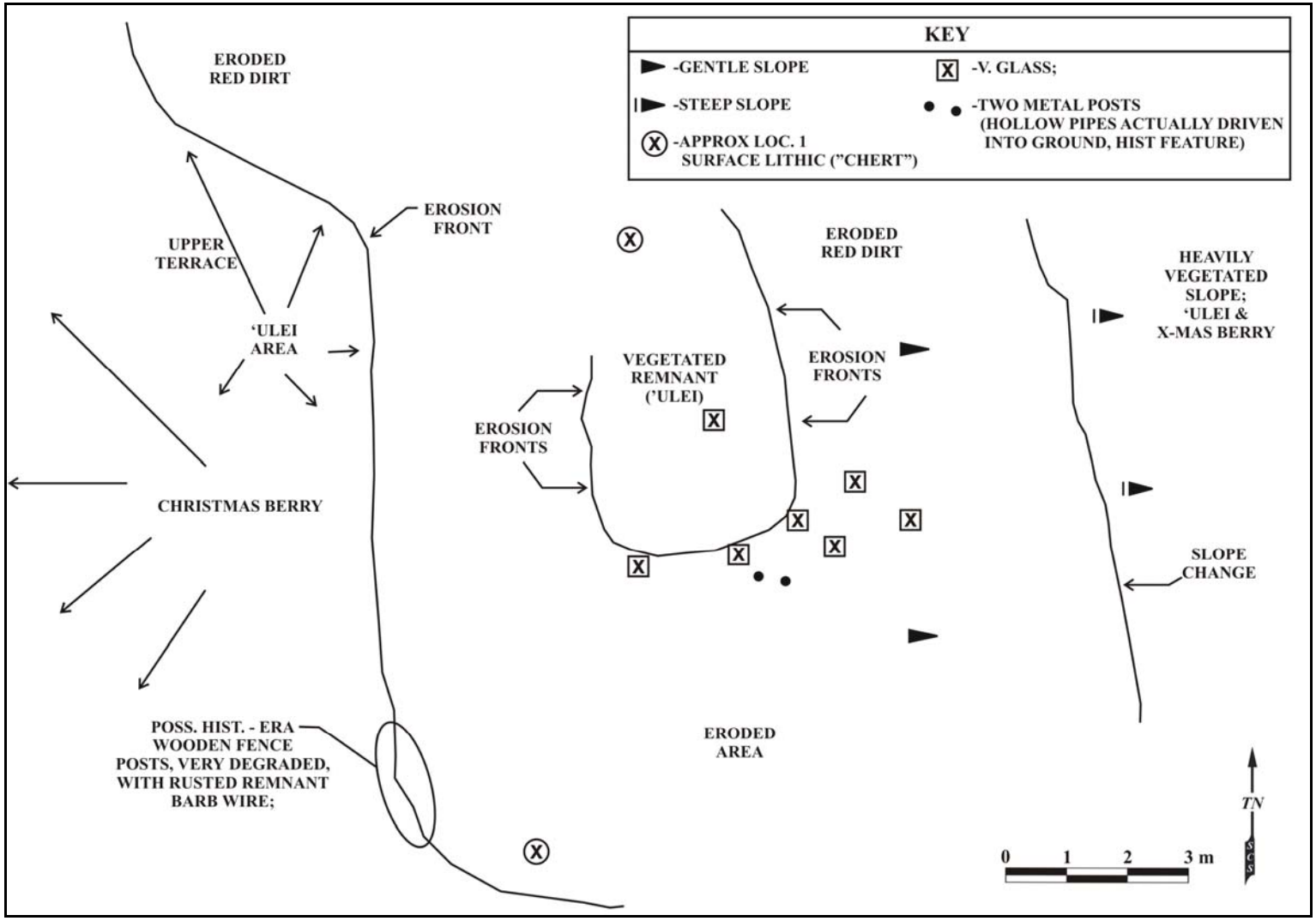


Figure 7: Plan View of TS-1.

Several late historic era nails were recovered from the ground surface of TS-1 as well. Two hollow metal pipes, partially driven into the subsurface, are located in the middle of the eroded soil patch at TS-1. No additional cultural materials, *e.g.,* traditional food midden, were observed at the ground surface at TS-1.

TEMPORARY SITE 2

TS-2 is an Historic water-flow control structure, located within the APE, in the northern half of the project area (Figures 8–11). TS-2 appears to be part of a pipeline-tunnel shown on USGS quadrangle maps. TS-2 consists of two main features: a rectangular construction of large, hand-shaped, basalt blocks, stacked with mortar/concrete (Feature 1), and a concrete-encased valve/pumping station (Feature 2), adjacent to the main structure. The site appears to date from the plantation era, when water from the Kawainui Marsh was diverted to the Waimānalo and Kāne`ohe areas for commercial agriculture.



Figure 8: TS-2, Feature 1. Facing South-southeast.

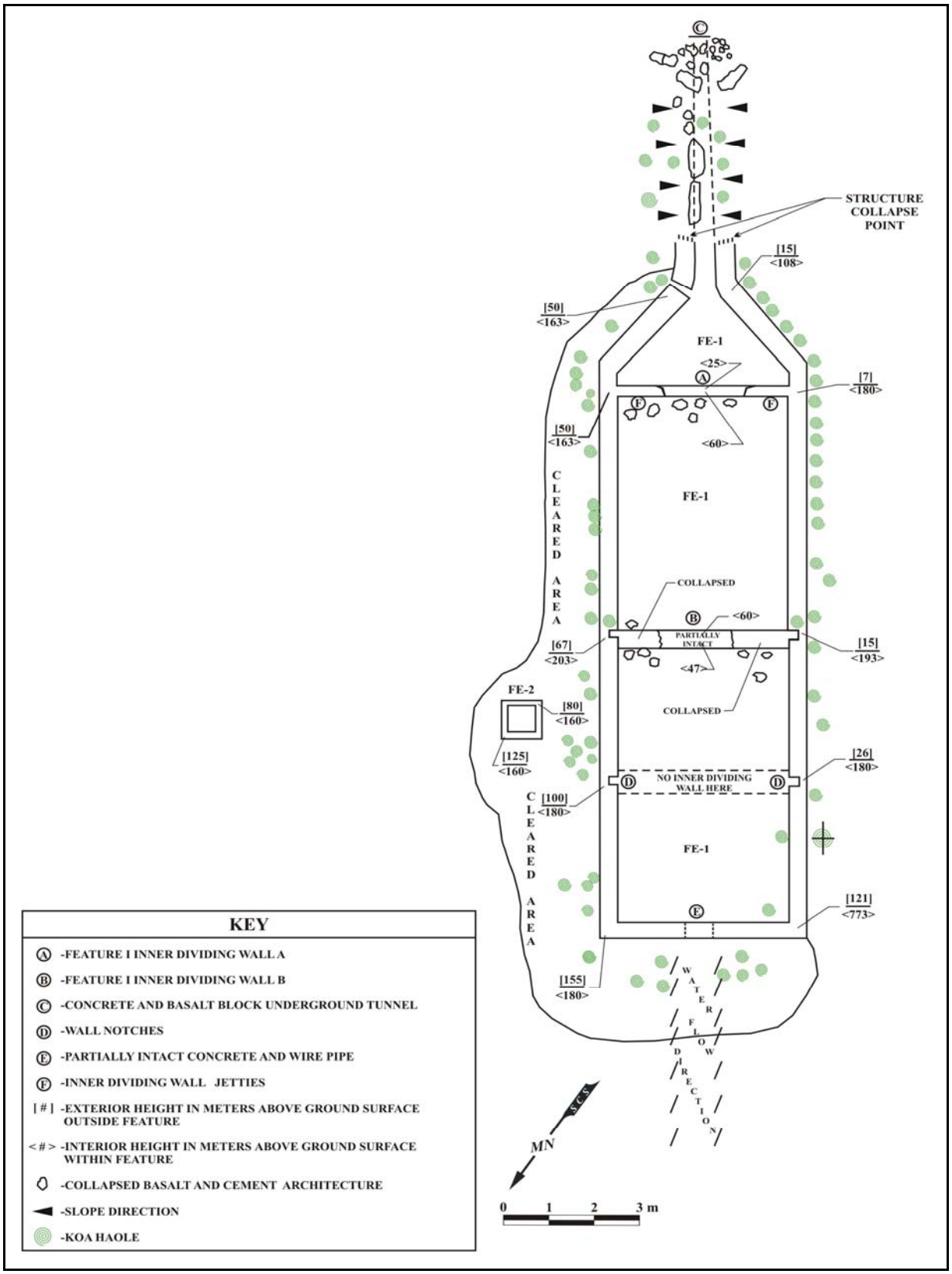


Figure 9: Plan View of TS-2.



Figure 10: TS-2, Feature 2. Facing South-southeast.



Figure 11: TS-2, Showing Collapsed Tunnel. Facing South-southeast.

Feature 1 is constructed of small, basalt boulders that have been hand-shaped into blocks. These were then mortared and stacked 6–7 courses in height. Maximum exterior dimensions of this feature are: 16.7 m (55 ft.) long by 4.6 m (15 ft.) wide by 1.9 m (6 ft.) high. Maximum interior dimensions are: 15.9 m (52 ft.) long by 3.8 m (12 ft.) wide by 1.7 m (5.6 ft.) high. The walls are approximately 0.40 m (1.3 ft.) thick. The feature is oriented on a north-northwest to south-southeast axis. Vegetation within and around this feature has altered its physical integrity to some degree, particularly the original extent and morphology of the interior partitions. A blocked tunnel opening is located at the south (upslope) end of this feature. A large outlet pipe is located at the base of the north (downslope) side of this feature.

Feature 2 consists of a concrete block form, which encases a value or gauging station, along the east side of Feature 1. Feature 2 was constructed of concrete poured into a form. This square feature has maximum dimensions as follows: (exterior) 0.90 m (3.0 ft.) long by 0.90 m (3.0 ft.) wide by 1.15 m (3.8 ft.) high; and, (interior) 0.60 m (2.0 ft.) long by 0.60 m (2.0 ft.) wide by 1.15 m (3.8 ft.) high. Wall thickness is 0.15 m (0.5 ft.).

SIGNIFICANCE ASSESSMENTS

Two sites were documented in the project area during Archaeological Inventory Survey at TMK: (1) 4-2-003: 004 (por.) and 022 (por.) (Table 1).

Table 1: SIHP Sites Documented During Archaeological Inventory Survey in the APE.

Site No.	No. of Fea.	Formal Description	Site Size (Area)	Functional Interpretation	Temporal Designation
TS-1	1	Lithic surface scatter; probable raw material procurement site	100 sq. m.	Resource procurement (lithics)	Pre-Contact
TS-1	2	Water control site, associated with historic pipeline-tunnel system	150 sq. m.	Regional irrigation and water management	Historic

The sites have been evaluated for significance according to the criteria established for the State and National Register of Historic Places. The five criteria are paraphrased below:

Criterion A: Site is associated with events that have made a significant contribution to the broad patterns of our history;

Criterion B: Site is associated with the lives of persons significant to our past;

Criterion C: Site is an excellent site type; embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual construction;

Criterion D: Site has yielded or has the potential to yield information important in prehistory or history;

Criterion E: Site has cultural significance; probable religious structures or burials present (State of Hawai`i criteria only).

Site TS-1

This Pre-Contact site consisting of a small scatter of eroded stone tool debitage (both crypto-crystalline silicate and volcanic glass) is significant under criterion D.

Site TS-2

This Historic site consisting of a water-control structure is significant under criterion D.

RECOMMENDATIONS

No further archaeological work is recommended at these two sites, which have been adequately documented and investigated.

TS-1 is located outside the present project area and will not be adversely impacted by the construction activities associated with the building of the access road. Its location, at or near the topographic summit of the ridge, appears to be well beyond the planned access route(s).

TS-2 has been adequately documented, including the confirmation that it, indeed, is a feature of the widespread pipeline and tunnel complex shown on USGS maps.

Archaeological Monitoring is recommended for all future construction in the APE, given the extremely dense and widespread vegetation. As stated above, much of the ground surface within the project area was completely obscured by this mostly-introduced vegetation. Although it is unlikely, given the steep terrain within the project area, there is still a moderate chance of encountering traditional sites and/or features missed during the Inventory Survey.

REFERENCES

Abbott, I.A.
1992 *Lā`au Hawai`i*, Traditional Hawaiian Uses of Plants. B.P. Bishop Museum, Honolulu, HI.

Allen-Wheeler, J.
1981 *Archaeological Excavations in Kawainui Marsh, Island of O`ahu*. On file at SHPD, Kapolei, HI.

Athens, S.
1997 "Hawaiian Native Lowland Vegetation in Prehistory", in (P.V. Kirch and T.L. Hunt, Eds.) *Historical Ecology in the Pacific Islands*, pp. 248-270. Yale University Press, New Haven, CT.

Beckwith, M.W.
1970 *Hawaiian Mythology*. University of Hawai`i Press, Honolulu, HI.

Brennan, P.
2000 *History of Kailua.* http://www.khnl.com.

Clarke, J.T.
1980 *Phase I Archaeological Survey of Castle Estate Lands Around the Kawainui Marsh, Kailua, O`ahu*. On file at SHPD, Kapolei, HI.

Creed, V., and R. Chiogioji
1991 *Facets of Maunawili Valley and Kailua Ahupua`a History in Conjunction with Named Places in the Ahupua`a of Kailua with Special Emphasis on Maunawili Valley.* Cultural Surveys Hawai`i, Kailua, HI.

Drigot, D., and M. Seto
1982 *Ho`ona`auao No Kawai Nui (Educating About Kawai Nui): A Multi-Media Educational Guide.* University of Hawai`i-Mānoa, Honolulu, HI.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soils Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service: Washington, D.C.

Fornander, A.
1969 *An Account of the Polynesian Races Volumes I, II, and III*. Charles E. Tuttle and Co., Rutland, VT.

Hall, W.T.
1997 *The History of Kailua: 77–78*. P.O. Box 395, Kailua, HI.

Hunt, T.L. and R.M. Holsen
1991 An Early Radiocarbon Chronology for the Hawaiian Islands: A Preliminary Analysis. *Asian Perspectives* XXX (1):147-161.

Kailua Historical Society
2005 *Mo`Olelo O Kailua* (Story of Kailua). http:www.kailuahistoricalsociety.org.

Kamakau, S.M.
1991 *Tales and Traditions of the People of Old Nā Mo`olelo a ka Po`e Kahiko*. B.P. Bishop Museum Press, Honolulu, HI.

Kelly, M., and B. Nakamura
1981 *Historical Study of Kawainui Marsh Area, Island of O`ahu.* B.P. Bishop Museum, Department of Anthropology, Honolulu, HI.

Kikiloi, S.T, M. McDermott, and H.H. Hammatt.
2000 *Archaeological Inventory Survey for the Kawainui Marsh Park Improvements Area Kailua, Ahupua`a of Kailua, Island of O`ahu, TMK 4-2-16 portion 01, portion 08.* Cultural Surveys Hawai`i, Kailua, HI.

Kirch, P.V.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory.* University of Hawai`i Press, Honolulu, HI.

1996 *Legacy of the Landscape: An Illustrated Guide to Hawaiian Archaeological Sites.* University of Hawai`i Press, Honolulu, HI.

Malo, D.
1991 Mo`olelo Hawai`i; *Hawaiian Antiquities*. Translated by Emerson in 1898. B.P. Bishop Museum, Honolulu, HI.

McAllister, J.G.
1933 *Archaeology of O`ahu*. B.P. Bishop Museum Bulletin 104, Honolulu, HI.

Pearson, R.J., P.V. Kirch, and M. Pietrusewsky
1971 Early Prehistoric Site at Bellows Beach, Waimānalo, Oahu, Hawaiian Islands. *Archaeology and Physical Anthropology in Oceania* VI (3):204-234.

Pukui, M.K., S.H. Elbert, and E.T. Mookini
1974 *Place Names of Hawaii.* University of Hawaii Press, Honolulu, HI.

Schmitt, R.C.
1973 *The Missionary Censuses of Hawaii.* Pacific Anthropological Records No. 20, Department of Anthropology, B.P. Bishop Museum, Honolulu, HI.

Spriggs, M. and A. Anderson
1993 Late Colonization of East Polynesia. *Antiquity* 67:200-217.

Sterling, E.P. and C.C. Summers
1978 *Sites of Oahu*. Departments of Anthropology and Education, B.P. Bishop Museum, Honolulu, HI.

Tuggle, H.D.
1994 Archaeological Research of Areas Proposed for Development of Military Family Housing and Expansion of Military Training at Bellows Air Force Station, Oahu. International and Archaeological Research Institute, Inc. Honolulu, HI. Wagner, W.L., D.R. Herbst, and S.H. Sohmer
1990 *Manual of Flowering Plants of Hawai`i.* B.P. Bishop Museum, Honolulu, HI.

Waihona `Āina
2002 Waihona `Āina Māhele Database and Land Records. Cultural surveys Hawai`i.

Williams, S., P. Mills, and J. Allen
1995 *Archaeological Investigations in the Luluku Banana Farmers' Relocation Area, Maunawili Valley, Kailua Ahupua`a, O`ahu, Hawai`i, TMK 4-3-53:29*. On file at SHPD, Kapolei, HI.

APPENDIX B

Kailua High School Proposed Additional Access Road Project

Cultural Resource Assessment

Prepared for

The Department of Accounting and General Services (DAGS)

Prepared by

Parsons Brinckerhoff Quade & Douglas, Inc.

December 2006

Table of Contents

Section **Page**

1.0 INTRODUCTION

1.1 Project Background.....1-1

1.2 Purpose and Need 1-1

1.3 Project Description 1-3

1.4 Proposed Project Alternatives..... 1-3

1.5 Summary of Findings 1-8

2.0 CULTURAL RESOURCES ASSESSMENT METHODOLOGY AND FINDINGS

2.1 Background..... 2-1

2.2 Cultural Diversity..... 2-2

2.3 Urban Versus Rural..... 2-3

2.4 Cultural Practices in and Urban Area.....2-4

2.5 Cultural Context of the Larger Area..... 2-5

3.0 PHYSICAL RESOURCES

3.1 Existing Resources 3-1

3.2 Probable Impacts 3-5

3.3 Potential Mitigations 3-7

4.0 CULTURAL PRACTITIONERS 4-1

5.0 LIST OF CULTURAL INFORMANTS 5-1

6.0 AGENCY AND COMMUNITY CONSULTATION

6.1 SHPD Pre-Consultation 6-1

6.2 Community and Cultural Groups 6-2

7.0 REFERENCES 7-1

8.0 LIST OF ACRONYMS 8-1

APPENDICES

A. Act 50

LIST OF FIGURES

Figure **Page**

1 Project Location 1-2
2 Project Alternatives 1-4
3 Typical Section..... 1-5
4 Cultural Resource Sites..... 1-9

CHAPTER 1
INTRODUCTION

1.1 PROJECT BACKGROUND

The Pohakupu neighborhood of Kailua has been trying to build an alternative road to access Kailua High School (KHS) for approximately 25 years, possibly as a result of many serious injuries to neighborhood pedestrians over the years. The Department of Accounting and General Services (DAGS) is now planning for an alternative access to KHS in order to alleviate traffic and improve safety in the neighborhoods surrounding the school (Figure 1), and the purpose of this report is to analyze and assess potential impacts upon cultural resources that could occur as a result of implementation of the proposed project alternatives.

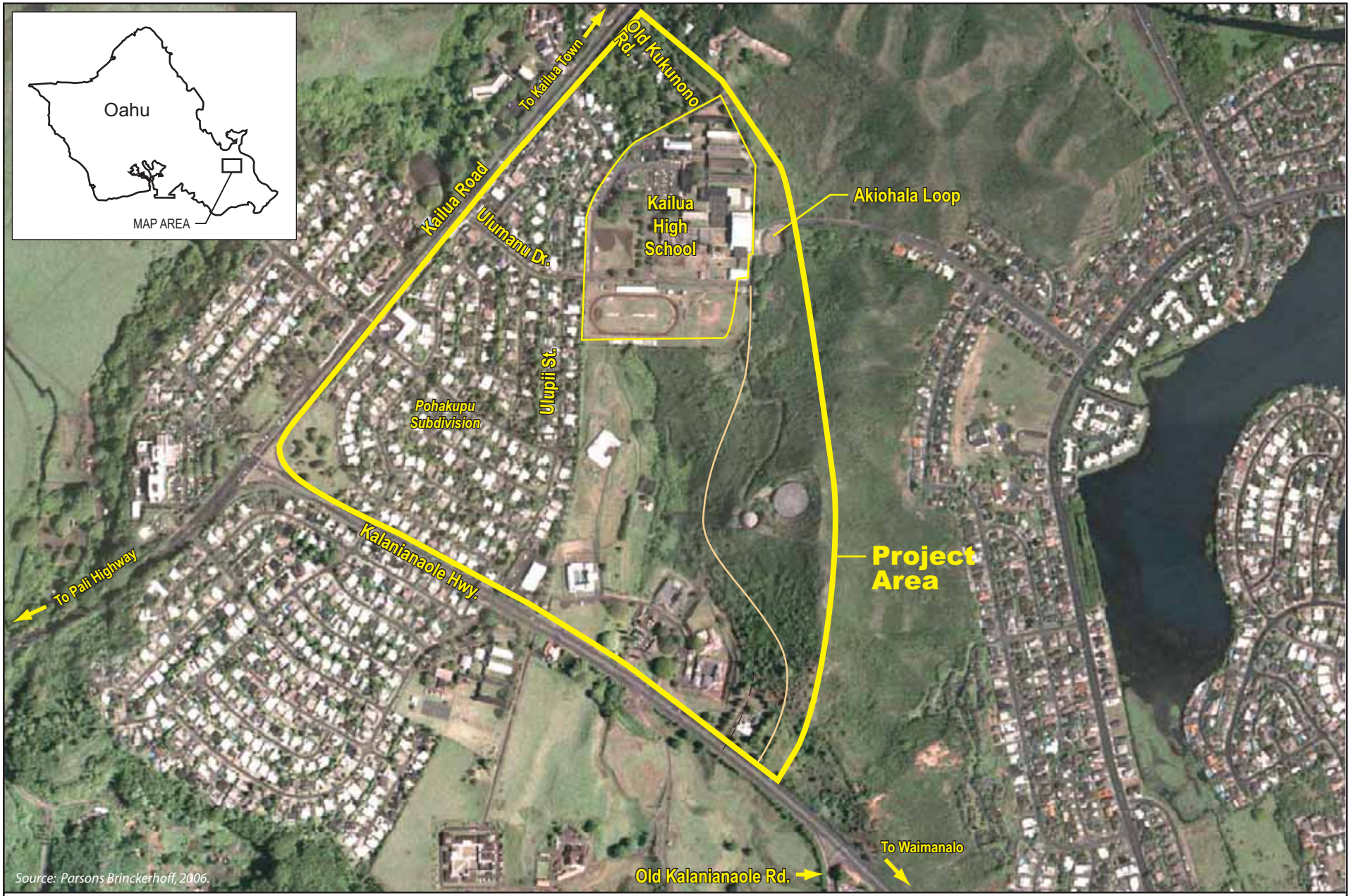
1.2 PURPOSE AND NEED

1.2.1 Proposed Project Purpose and Need

The project purpose and need is to provide decreased traffic though Pohakupu subdivision and increased safety for vehicular and pedestrian access to Kailua High School (KHS), while minimizing potentially negative affects on adjacent neighborhoods and communities due to altered traffic patterns and access routes.

1.2.2 Cultural Resources Assessment (CRA) Purpose and Need

The purpose and need for this Cultural Resource Assessment (CRA) stem from the preparation of a Draft Environmental Assessment (EA) pursuant to the Hawaii Revised Statutes (HRS), Chapter 343 environmental review process. Therefore, a Cultural Resources Assessment (CRA) is required pursuant to Act 50, passed by the 2000 State of Hawaii legislative session (Appendix A), requiring that cultural resources be identified and evaluated for EAs and Environmental Impact Statements (EISs). This CRA is intended to comply with Act 50 in word and "spirit" and will attempt to identify and evaluate the potential impacts of the proposed project alternatives upon cultural practitioners and resources in the project vicinity.



N

SCALE:

0 1/8 mi. 1/4 mi.

Project Location

Kailua High School Additional Access
Cultural Resource Assessment
Figure 1

1.3 PROJECT DESCRIPTION

Six alternatives (Alternatives 1-6) and the "No-Build" alternative (Alternative 7) have been developed to meet the purpose and need for the project, and are described as follow (see Figure 2). All the alternatives except the proposed road (Alternatives 1 and 2) were determined to have little or no impact upon cultural resources in their respective vicinities.

1.4 PROPOSED PROJECT ALTERNATIVES

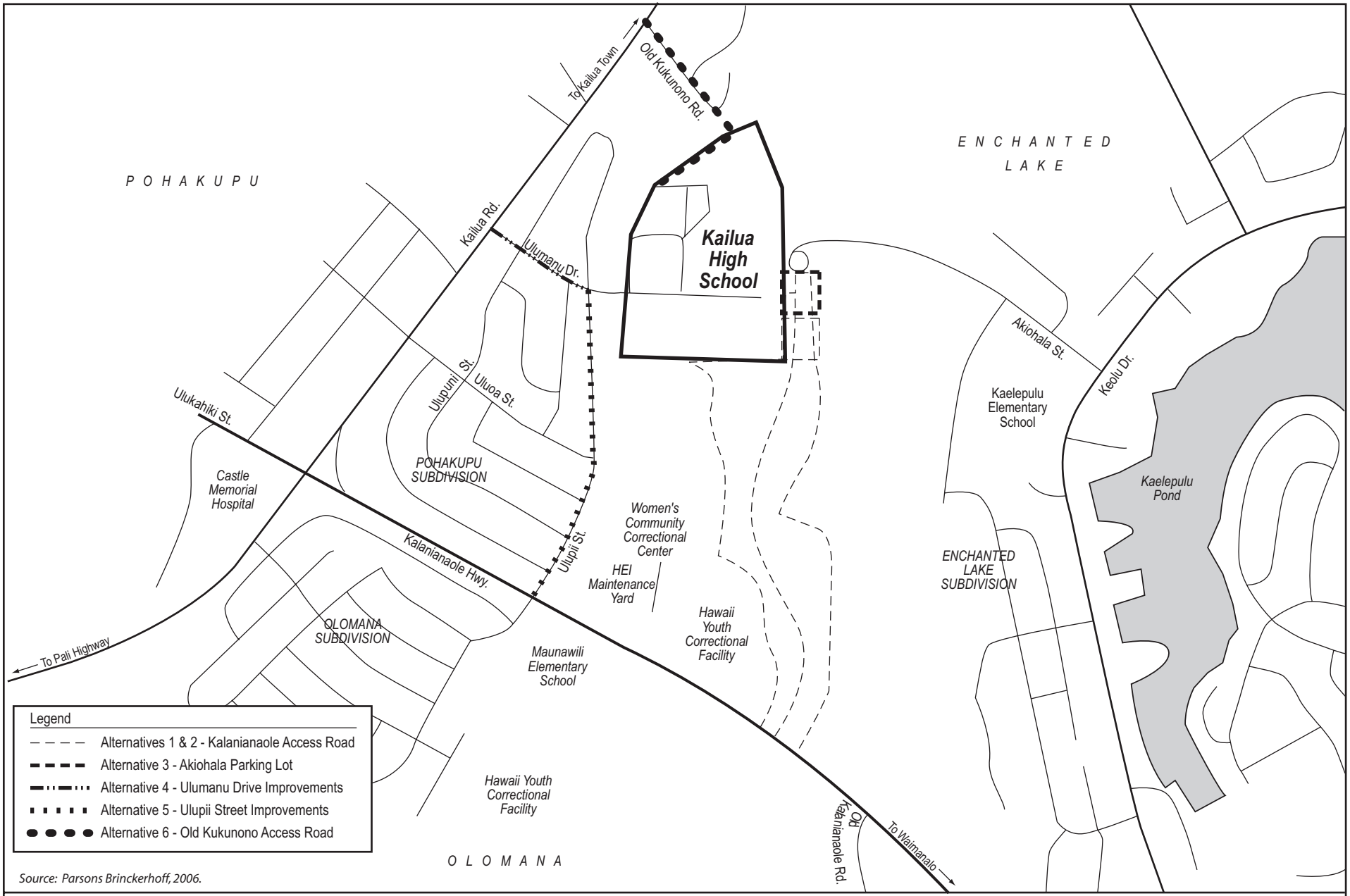
1.4.1 Alternatives 1 and 2: Construction of New Roadway and Parking Lot from Kalanianaole Highway to Kailua High School Property

Alternatives 1 and 2 propose construction of a new roadway from Kalanianaole Highway to Kailua High School property (see Figure 2). Alternative 2 is distinguished from Alternative 1 by its restrictions on the Ulumanu Drive KHS front entrance. With Ulumanu Drive entrance restrictions in place, Alternative 2 best meets the purpose and need in comparison to the other alternatives considered, by redirecting the greatest number of vehicles to the new access road. A lack of DOE support for the restricted access remains an unresolved issue for Alternative 2. Both alternatives 1 and 2 would divert KHS traffic to the new roadway, thereby relieving Pohakupu subdivision of the traffic. The road would be built to modern safety standards, resulting in increased safety for motorists and pedestrians alike.

Both Alternatives 1 and 2 consist of two primary actions: the construction of the new access road and the construction of a new student parking lot at the makai terminus of the access road.

The road will have two paved lanes, one in each direction, and each lane will be 12-feet wide, with a ten-foot shoulder and a six-foot wide sidewalk (see Figure 3).

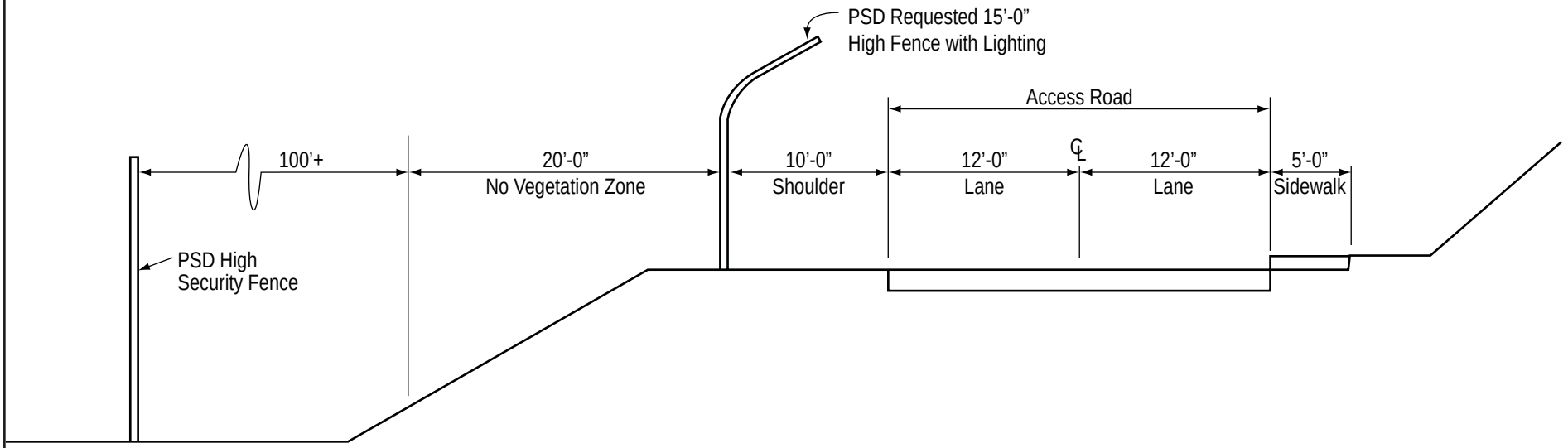
The new road will provide direct access to the high school from Kalanianaole Highway through existing State land. The connection point will have adequate sight distance at the Kalanianaole entrance, and the road will traverse Department of Public Safety (DPS) property from the Kalanianaole Highway to the rear of Kailua High School (KHS), to a location near the existing Board of Water Supply (BWS) access road. A small



Source: Parsons Brinckerhoff, 2006.

Project Alternatives

Kailua High School Additional Access
Cultural Resource Assessment
Figure 2



KAILUA HIGH SCHOOL ACCESS ROAD
ADJACENT TO PSD HIGH SECURITY AREA

Typical Section

Kailua High School Additional Access
Cultural Resource Assessment
Figure 3

parking lot (approximately the same size as present student parking—actual size will be determined in final design phase) will be located on the east side of the KHS connection point on DPS land, and it is included in these alternatives. The actual size would be determined during final design. No connection will be made from the present

Akiohala drop to the new parking lot, no cross-campus traffic will be permitted, and the turn around from the Akiohala drop will remain unimproved.

The following list describes major items of work anticipated.

- Construct a parking lot.
- Construct a two-lane access road.
- Install sidewalk on the east edge of the access road throughout the entire project, from the drop-off and parking lot to the campus, in accordance with Americans with Disabilities Act (ADA) requirements and Hawaii Revised Statutes (HRS 103-50).
- Design drainage systems in accordance with the latest versions of the HDOT Criteria for Highway Drainage and the FHWA Hydraulic Engineers Circulars and Hydraulic Design Series.
- Implement permanent post-construction Best Management Practices (BMPs) to decrease the amount of stormwater runoff and improve the water quality of stormwater runoff discharging from the project site.
- Install signs and pavement markings.
- Install streetlights and other safety fixtures that comply with National Cooperative Highway Research Program (NCHRP-350) in accordance with the Roadside Design Guide.
- Incorporate the following security specifications required by Department of Public Safety because the road will traverse their parcel in close proximity to the Women's Community Correctional Center (WCCC) facility: 1) security fencing, roadway illumination, signage; 2) video surveillance; 3) Access Roadway Gate[s]; 4) controlled access granted to WCCC; and 6) a vegetation "no-pass" strip.

1.4.2 Alternative 3: New Akiohala Parking Lot

Alternative 3 proposes to connect the present Akiohala drop-off to a parking lot (approximately the same size as present student parking—actual size will be determined in the final design phase) on the east side of the campus near present drop-off area (see Figure 2). The actual size would be determined during final design.

No cross-campus traffic will be allowed because it interferes with on-campus foot traffic. The present and proposed parking lots will be separate, and students will have the choice to access either one. KHS issues of security, labor and lighting are still unresolved.

1.4.3 Alternative 4: Ulumanu Drive Sidewalk Improvements

Alternative 4 proposes sidewalk improvements to Ulumanu Drive--the main entrance to KHS (Figure 2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.4.4 Alternative 5: Ulupii Street Sidewalk Improvements

Alternative 5 proposes sidewalk improvements to Ulupii Street to allow traffic to utilize Ulupii to get from Kalanianaole to the Ulumanu Drive main entrance (Figure 2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.4.5 Alternative 6: Makai "Old Kukanono" Access Road

Alternative 6 proposes to connect Kailua Road to the campus student parking lot via a new (shorter) access road at the interface between Pohakupu subdivision (makai end near Uluopiho Loop) and the private homes (sometimes referred to as Old Kukanono--see Figure 2). This option would generally target those that are already using the Ulumanu Drive main KHS entrance. The new road would have to follow the usually dry, high-volume drainage ditch and it would probably require condemning 1-3 homes. Although this new road connects many of the required project elements, questions related to reliability and safety of roadway use adjacent to a dry streambed/drainage ditch remain unresolved issues. Additionally, the potential for three residential properties to have Right of Way impacts is also a significant unresolved issue. Together, the two unresolved issues of constructing a road in a dry streambed/drainage ditch and displacement of three residential properties have deemed Alternative 6 unworkable and unworthy of further consideration.

1.4.6 Alternative 7: No Build

Alternative 7 proposes to maintain the status quo, with no proposed project improvements. Communities affected by KHS activities would remain unchanged and would maintain present levels of traffic and pedestrian safety.

1.5 SUMMARY OF FINDINGS

One area in the vicinity of proposed Alternatives 1 and 2 has demonstrated the potential for cultural resources (see Figure 4), and two potential cultural resources have been identified: a *ki* (ti) planting, also referenced in the Archaeological report (Scientific Consulting Services, 2005), and irrigation features that may have been an earthen *lo'i kalo* (taro patch) built on the hillside. Although the *ki* (ti) plants are abundant throughout the islands, they may have particular cultural significance to those that planted them whether or not the particular plants are from a significant place or lineage. Additionally, because *ki* (ti) plants appear to be comparatively scarce in the proposed project area, those plants that are there represent a resource for potential cultural practitioners who may use the leaves for such cultural activities as lei making or offerings. Based on interviews with informants and a field investigation, both were determined to be Hawaii Youth Correctional Facility (HYCF) cultural awareness projects constructed approximately 10-15 years ago, and they have since been abandoned. The lack of maintenance of the irrigation feature has allowed 10-15 foot *koa haole* trees to grow, and because it is an unenforced earthen structure, it is eroding away into dysfunction and visual obscurity. No other potential cultural resources or practitioners exist on or near the access road proposed by Alternatives 1 and 2, or by any of the alternatives.



N

SCALE:

0 1/8 mi. 1/4 mi.

Cultural Resource Sites

Kailua High School Additional Access
Cultural Resource Assessment
Figure 4

CHAPTER 2:
CULTURAL RESOURCES ASSESSMENT METHODOLOGY

Because Hawaii is a melting pot of many cultures, cultural traditions and activities are important aspects of community cohesion in Hawaii. Well-established cultural practices and resources function to facilitate communication and integration of diverse cultures that are otherwise forced to interact in workplaces, schools, and outdoor and natural environments. Cultural practices and resources also function as a common communications channel that help to create bonds between diverse communities.

The preservation and nurturing of diverse cultures is an important part of Hawaii's social fabric, and as a result, development projects must take this into account by assessing how their project might potentially impact Hawaii's cultural resources. The following sections describe the methods and findings used in this Cultural Resources Assessment (CRA).

Past projects were referenced and used as models for guidance in attempting to comply with applicable regulations (in particular Act 50) and in order to meet the challenges posed by the project alternatives that are proposed for urban settings. Past projects utilized include those in surrounding areas, in similar urban settings, and those with exemplary methodology. The 2002 the Primary Corridor Transportation Project (PCTP) is an exemplary model performed in an urban environment that employed the following methods: consulting with experts to develop a list of potential informants and approaches, discussing examples with informants, driving and walking through neighborhoods and undeveloped project lands, and securing schedules and other publications that address cultural resources in the area. This CRA has attempted to employ similar methods.

A field investigation conducted in August of 2005 made a point to invite various local *kapuna* and knowledgeable and interested individuals. Chuck Burrows, a well-known community cultural leader was the only person to accept the invitation, and much of the walkable project area for Alternatives 1-3 was covered.

2.1 BACKGROUND

In 2000, the Hawaii State Legislature passed Act 50, Hawaii Session Laws (Act 50) to specifically require Environmental Assessments (EA) and environmental impact statements (EIS) to include an assessment of cultural practices in the area potentially affected by a proposed project (Appendix A). The legislation requires studies and analysis of the effects of a proposed action on the economic welfare, social welfare, and *cultural practices* of the community and State. This CRA will focus on cultural practices and resources. Economic and social welfare will be analyzed separately within the body of the larger EA document for which this CRA is being prepared.

2.2 CULTURAL DIVERSITY INCLUDED

Given the specific legal language of Act 50 mentions only "cultural practices" and does not specify that Native Hawaiian and indigenous cultures are the only ones to be studied, the interpretation is that *all* cultural practices and resources are to be assessed and potential impacts from a project analyzed. While traditional CRAs have focused primarily on native Hawaiian cultural practices within a given area, the CRA for this project has attempted to include all ethnic groups and individuals who may have information on all cultural practices within the study area. This would ensure the cultural resources report would be representative of the community and State, a diverse variety of cultures.

2.3 URBAN VERSUS RURAL

While Act 50 and the State of Hawaii Environmental Council provided guidelines for assessing cultural impacts within a traditionally rural or undeveloped setting, the mostly residential area surrounding KHS Additional Access Project requires that both urban and rural settings be analyzed.

In the rural areas surrounding the additional access road proposed by Alternatives 1 and 2 and in surrounding areas dense in cultural resources such as Kawainui Marsh, a more traditional definition of traditional cultural practices was utilized. *Traditional* refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice, and are important in maintaining the continuing cultural identity of the community. (National

Register Bulletin # 38, U.S. Department of the Interior, National Park Service, *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, 1992). Specifically, the CRA attempted to identify traditional land use, life ways, hunting or gathering, agricultural practices, religious practices, and other things of cultural importance to the community.

2.4 CULTURAL PRACTICES IN AN URBAN AREA DEFINED

The definition of cultural practices from the Primary Corridor Transportation Project for urban area was referenced (Parsons Brinckerhoff Quade & Douglas, 2002), and it is defined as:

(1) A traditional cultural practice that is being conducted in an urban setting; and

(2) Traditions, beliefs, practices, life ways, and societal history of a community and its traditions, arts, crafts, music, and related social institutions.

2.5 CULTURAL CONTEXT OF LARGER AREA

Freshwater resources surrounding KHS include Kawainui Marsh, Oneawa Canal, and Ka'elepulu Pond, and all are rich in physical and archaeological cultural resources.

Within one mile of the proposed Alternatives 1 and 2, and within only a half mile of Alternatives 3-6, is *Kawai Nui*, a legendary place in Hawaiian traditions, referred to in the legends of Kawelo, Kahalaopuna, Keoalomelemele, the *menehune*, and in the history of the ruling chiefs Kuali`i and Olopana. *Kawai Nui* was the home of the *mo`o* Hauwahine and the wish-filling tree Makalei. It was visited by the demi-goddess Hi`iaka and her companion Waihineoma`o. Numerous chants allude to *Kawai Nui's* fame, and Kawai Nui was famous it's abundance of food provided to the Hawaiian people.

CHAPTER 3:
PHYSICAL RESOURCES

The cultural resources described in this section of the report include only the existing physical resources of the area: archaeological, avian, land-based plants and animals, and aquatic flora and fauna. These resources represent potential physical cultural materials for human cultural practitioners to use in their cultural activities.

3.1 Existing Resources in Vicinity of Project Alternatives

3.1.1 Archaeology

Alternatives 1, 2, and 3: In July 2005, Scientific Consulting Services (SCS) conducted an archaeological Inventory Survey on approximately 25 acres of land within and around the proposed project site. The survey consisted of historical background and archival research; a pedestrian survey of the parcel; mapping and description of surface features, and analysis, interpretation, and reporting of all relevant data. Given the relatively low potential for finding significant subsurface deposits in the Area of Potential Effect (APE), no testing (excavation) was conducted; however, the consultant did recommend archaeological monitoring during construction.

Two archaeological sites were identified and recorded during the survey. The first is TS-1, a Pre-Contact lithic procurement site (stone tool mining and manufacturing) with small amounts of crypto-crystalline silicate (CCS) and volcanic glass debitage (artifact stone flakes) on the ground surface, located on an eroded hillside top near the southeast corner of the project area and outside of the boundaries of the project Area of Potential Affect (APE). Site TS-2 is a Historic water-flow control structure located within the northern half of the project APE. USGS quadrangle maps indicate that it is part of a plantation era pipeline-tunnel system that connected a Kawainui Marsh water source to commercial sugar cane fields in Waimanalo. This irrigation structure consists of two features: a rectangular construction of large, hand-shaped, basalt rocks, stacked

with mortar/concrete; and a concrete-encased valve/pumping station, adjacent to the main structure.

The archaeological consultant also located and identified a potential cultural resource in the vicinity of the proposed project. A *ki* (ti) planting (Figure 4) was noted and referenced in the Archaeological Report.

Alternatives 4 and 5:

Residential urbanized settings exist for Alternatives 4 and 5, but within 0.25 to 0.5-mile from Alternative 4 lies Ulupo Heiau, an epicenter of Hawaiian cultural activity in the Kailua Area. The heiau itself lies on top of a freshwater spring, and PVC piping can be seen leading from beneath the heiau's stone structure to a nearby stream running along the heiau's makai side, used to irrigate a surrounding cultural garden.

Kawai Nui is also within 0.5-mile of Alternative 4. At least thirty two previous archaeological studies have been performed at *Kawai Nui*, documenting both traditional and post-contact sites including agricultural, habitation, and religious sites. At least three heiaus at *Kawai Nui* are considered cultural treasures to the Hawaiian people, and community cultural groups regularly conduct public tours to these sites.

Alternative 6: The Makai Old Kukanono Alternative occurs in a residential urbanized setting.

3.1.2 Earth Resources

Kawai Nui "edible earth" is one of the most famous traditional Hawaiian associations (Sterling and Summers, 1978).

The area between Keolu Hills to the southeast of the Kaelepulu Pond has shown to have fertile soils, but no records of Hawaiian agriculture exist for that area. The mauka side of Kaelepulu Pond going to Waimanalo was known to be a fertile area (Helber, Hastert and Fee, 1992).

3.1.3 Stone Resources

Basalt flakes located near the location of the Alternative 1 proposed road (but outside Area of Potential Effect [APE]) also suggest the possibility of adze working or manufacturing in the area. Grinding stones found at the base of Kukanono Slope suggest adze working at that location..

3.1.4 Water Resources

3.1.4.1 Springs and Streams

Mahale land claimants testified before the Land Commission, providing information on land use prior to 1850. Kailua's LCA document 18 permanent and intermittent streams that fed many garden areas. The Maunawili/Kahana `iki Stream delta is a lo-lying marshy area with fertile soils among stream beds with taro lo`i (Helber, Hastert and Fee, 1992).

There is a culvert that runs under Kailua Road, which channels water from the storm drains in the Pohakupu subdivision to a ditch alongside Ulupo Heiau. This water eventually enters Kawainui Marsh. There remains some uncertainty about other sources of water outside the Pohakupu subdivision that may be entering this drainage system. In addition, there are a number of springs on the slopes above Kawainui Marsh, and water from these springs is used to irrigate the *loi kalo* (taro patches) around Ulupo Heiau.

The 1937 Territory of Hawai`i Statistics book shows a map of buildings around correction facilities, at the time known as the girl's home, and the map indicates that there is an unnamed stream (confirmed during a 2005 field investigation) located along the base of the hillside behind the WCCC, probably generated from the Kawailoa freshwater spring. A 2005 field investigation also revealed small natural artesian springs at the base of the hillside some distance above the stream, behind the WCCC; however, earthmoving activities over the springs appeared to inhibit the establishment of any wetland ecosystems one might expect to find. WCCC inmates participate in landscaping classes that have cultivated areas of this stream with Polynesian plants and *loi kalo* (taro loi). These areas were noted during the 2005 field investigation, but because they are located approximately 0.25 to 0.5-mile mauka of the project area, and

just makai of WCCC and Kalanianaole Highway, the proposed project alternatives are anticipated to have no potential affects.

3.1.4.2 Kawainui Marsh

The mean annual rainfall for this area of Kailua is about 50 inches per year, and much of the areas drainage water flows to Kawainui Marsh, located within a mile of the project site in the ewa (west) direction from the six proposed alternatives. Kawainui Marsh is the largest freshwater body in the State and is on the Ramsar List of Wetlands of International Importance. The broad aim of the Convention on Wetlands (Ramsar, Iran, 1971) is to halt the worldwide loss of wetlands and to conserve those that remain through wise use and management. This means ensuring that activities which might affect wetlands will not lead to the loss of biodiversity or diminish the many ecological, hydrological, cultural or social values of wetlands. *Ahahui Malama i ka Lokahi*, the Kailua Hawaiian Civic Club, and the Kawai Nui Heritage Foundation conduct a Kawai Nui Marsh Educational Series on Friday a few times a year, consisting of natural and cultural history tours of Kawainui Marsh that are open to the public.

3.1.5 Plant Resources

Alternatives 1-3: A botanical survey conducted by Char and Associates in March 1992 for the Kailua 272 Reservoir Final Environmental Impact Statement (FEIS) covers very similar land and ecosystems to those found within the project limits, and the reservoir survey area is directly adjacent and within 0.25 to 0.5-mile from the proposed project site. Therefore, extrapolating the results of this study to the proposed project area is appropriate. A site visit confirmed the similarity in vegetation and ecosystems. On the makai side of the hillside, the 1992 survey found 12 to 18-feet tall koa-haole shrubs (Leucaena leucocephala) on the slopes and Green panicgrass (Panicum maximum var. trichoglume) forming a short dense mat under the koa-haole shrubs with occasional blue potato vines (Solanun seaforthianum) growing over the koa-haole shrubs. Along the top of the hillside, near the area abutting the project site, the vegetation is open and grassy, and the predominant flora includes uhaloa (Waltheria indica), Klu (acacia farnesiana), Cuba jate (sida rhombifolia), and indigo (indigofera suffruticosa). Of the 56 species inventoried in the 1992 field study, 53 were introduced, one may be an early Polynesian introduction, and two are probably indigenous. No endemic, threatened, or

endangered plants were found. Other than the few *ki* (ti) plants previously noted in the vicinity of HYCF and Kalanianaole Highway area, no noteworthy plants of known use to Polynesian, Hawaiian, or other cultural practitioners were found within the Alternative 1 or 2 project areas.

In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered floral species, or proposed or designated critical habitat occur on the proposed project sites for Alternatives 1-3.

3.1.6 Fauna Resources

Alternatives 1, 2, 3 and 6: In December 1991 biological consultant Phillip L. Bruner conducted a survey of avifauna and feral mammals for the Kailua Gateway project, which is less than a mile makai of the project site and shares similar habitat and vegetation in a continuous swath of land that wraps around Keaniani Ridge (Pu'u O Ehu Ridge) mauka to makai. No endemic land birds were recorded; however, four endemic and endangered water birds were observed throughout the wetlands associated with the proposed Kailua Gateway site, in the vicinity of Oneawa Canal, and several migratory indigenous birds were observed. Fourteen species of exotic birds were recorded. In addition, mongoose and feral cats were observed, and domesticated horses and cattle were seen on the upper slopes and in the wetlands. In a September 14, 2005 letter, the United States Department of the Interior, Fish and Wildlife Service determined that no federally listed or proposed threatened or endangered faunal species, or proposed or designated critical habitat occur on the proposed project site for Alternatives 1-3.

Alternatives 4 and 5: These alternatives are located in the residential subdivision of Pohakupu; therefore, only fauna typical of an urban setting is present.

3.2 Probable Impacts Upon Physical Resources

Alternatives 1, 2 and 3:

No affect is anticipated to any potentially significant historic, archaeological, or physical resources located within or surrounding the project area for Alternatives 1-3.

The unnamed springs, observed during a 2005 PB field investigation behind the WCCC, are likely to be impacted to some extent by the construction of a road. Altered drainage patterns are likely to result from placement of a graded road along the hillside.

The botanical surveys of similar surrounding areas and a site visit have revealed that other than a few previously mentioned *ki* (ti) plants, there is no flora of cultural interest at the proposed sites, probably due to the fact past uses in the area have included extensive cultivation and grazing. Therefore, potential impact from proposed project alternatives will not entail any significant affect upon cultural plant resources in their respective areas.

The project is not expected to have adverse impacts upon fauna at the proposed project sites. Unlike the wetlands at the base of Keaniani Ridge (also known as Pu'u O Ehu Ridge) next to Kailua Town, the proposed project sites are not in the vicinity of any wetlands frequented by water birds; therefore, no endemic or endangered water birds should be affected by the proposed project.

Alternatives 4-6: No affect is anticipated to any potentially significant historic archaeological, or physical resources located within the proposed Alternatives 4-6 areas, due to the existing urbanized residential nature of the settings. These alternatives are proposed in residential neighborhoods; therefore, none of the proposed project alternatives are expected to have any significant adverse impact on the botanical resources at the sites.

Alternative 4: Although Ulupo Heiau is an epicenter of Hawaiian cultural activity in the Kailua Area and is within approximately 0.5-mile from proposed project Alternatives 4, there are no anticipated impacts to the heiau's cultural or natural environs, largely because Kailua Road, a major local transportation corridor, separates proposed project areas and Ulupo resources. Alternative 4's proposed construction of sidewalks on Ulumanu Street may alter drainage patterns by contributing slightly more storm water runoff due to an increase in impervious surfaces and small alterations to drainage patterns, but these changes are not expected to significantly increase levels of pollutants or suspended solids flowing through drainage systems that contribute to the heiau's water resources. The heiau itself lies on top of a freshwater spring, and PVC

piping can be seen directing water from beneath the heiau's stone structure to a nearby stream running along the heiau's makai side and leading to a cultural garden that extends down the hillside to Kawainui Marsh.

Alternative 6: This alternative is not expected to have adverse impacts upon fauna at the site, but the proposed alternative road project site is in the vicinity of Kawainui Marsh wetlands that are frequented by water birds. The endemic or endangered water birds' habitats could be affected by storm water runoff and drainage from the proposed project, but this alternative has been eliminated from consideration for other reasons, so no impact to fauna will occur. The proposed makai road through Old Kukanono has the potential to affect stormwater runoff. The hillside lands above it travels overland to Kailua road into State Department of Transportation storm sewers that discharge into Kawainui Marsh, and the private road of this residential community has no drainage system; therefore, stormwater drainage for Alternative 6 has the potential to adversely affect both the quantity and quality of water potentially entering Kawainui Marsh or Oneawa Canal.

3.3 Potential Mitigations

Alternatives 1-6: OHA has requested that if iwi or Native Hawaiian cultural or traditional deposits are found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. Project planning and execution will implement OHA's request.

Alternatives 1-3: Given that much of the ground surface within the Alternatives 1-3 project areas was obscured by vegetation, and because of the steep terrain within the project area; although it is highly unlikely, there is still a moderate chance of encountering traditional sites and/or features missed during the Inventory Survey. The archaeological consultant has recommended that given the extremely dense and widespread vegetation, Archaeological Monitoring should be included for all future construction in the Alternatives 1-3 Area of Potential Affect (APE).

Alternatives 1, 2 and 5: Water accumulated on the roadways would be collected in drainage structures along the alignment, where necessary, and discharged periodically down slope of the roadway. Wherever possible, storm water will be allowed to sheet

flow from the proposed new roadway/parking facilities, in order to promote recharge of the ground water. Final design will incorporate appropriate design considerations that may add permanent devices to the drainage system to minimize erosion issues downstream of discharge points, promote groundwater recharge, and reduce the total discharge volumes.

Alternatives 1 and 2: These alternatives could affect a "Tunnel/Ditch Line," that contains a cement "jacket" which once housed a pipeline that flowed from a pumping station on Kawainui Marsh, over Keaniani Ridge, and into Waimanalo Sugar Plantation. While there are some exposed areas of collapsed tunnel, most of the feature appears to be unexposed. There are no known wetlands or water bodies within the project site, but there appears to be a natural artesian spring directly adjacent to the site, at the base of the hill next to the Women's Community Correctional Center. In the event the road will cross the "tunnel/ditch," any exposed conduit will be plugged to prevent the potential for stormwater transmission and potential migration of construction-related silt runoff to Kawainui Marsh.

CHAPTER 4:
CULTURAL PRACTITIONERS

Cultural practices within and surrounding the project study area included: hula fishing, gathering, cultural gardens, lei making, cultural festivals, and lo'i kalo The cultural practices varied from a one time annual event (Ulupo Ho'ike) to community organizations' events (e.g. KHS Imu Program) where cultural activities were regularly held.

4.1 Cultural Practitioners in the Project Alternative Areas

4.1.1 Imu Fundraising Program

A contemporary *imu* site (i.e. a traditional Hawaiian underground oven where food is cooked) is at the corner of the baseball field adjacent to the JAFROTC Building. The imu is a permanent structure which boarders the KHS fence line in that area. For the past 10 years, the imu program has been used by KHS for fundraising to support the various programs at the school, and according to program organizers, a large segment of the Windward community participates in the imu program, and participants also include people from all parts of Oahu who bring their food to be cooked in the KHS imu. Another example of the program's success cited by organizers is the Thanksgiving imu, for which up to 400 trays of food are cooked overnight for a nominal fee. On Thanksgiving morning, anywhere from 800-1000 people come on campus to pick up their cooked food. Throughout the year there are smaller imus for the various school organizations on campus to help in their fundraising efforts.

In 2005 volunteers built a roof over the imu and the adjoining 80 foot concrete slab is used for imu set-up and by the air riflery team for rifle practice. Donations of labor, equipment, supplies and materials from many businesses and organizations for this roofing project were generously given. Organizers have asserted that the imu program plays an important role in the cultural and environmental education of KHS students; therefore, it is a major concern of the school and the community to preserve and protect the imu site and prevent any impact to the surrounding structures. Given the time and

efforts that the school and the community have put into support and maintenance of the imu program, they have expressed concern that the construction of the proposed new access road proposed in alternatives 1 and 2 is carefully planned so as not to impact or remove any existing buildings, grounds, or facilities on the Kailua High School campus.

4.1.2 HYCF Cultural Projects

Alternatives 1 and 2: One area in the vicinity of proposed Alternatives 1 and 2 has demonstrated the potential for cultural resources (see Figure 4), and two potential cultural resources have been identified: a *ki* (ti) planting, also referenced in the Archaeological report (Scientific Consulting Services, 2005), and irrigation features that may have been an earthen *lo'i kalo* (taro patch) built on the hillside. Although the *ki* (ti) plants are abundant throughout the islands, they may have particular cultural significance to those that planted them whether or not the particular plants are from a significant place or lineage. Additionally, because *ki* (ti) plants appear to be comparatively scarce in the proposed project area, those plants that are there represent a resource for potential cultural practitioners who may use the leaves for such cultural activities as lei making or offerings. Based on interviews with informants and a field investigation, both were determined to be Hawaii Youth Correctional Facility (HYCF) cultural awareness projects constructed approximately 10-15 years ago, and they have since been abandoned. The lack of maintenance of the irrigation feature has allowed 10-15 foot *koa haole* trees to grow, and because it is an unenforced earthen structure, it is eroding away into dysfunction and visual obscurity. No other potential cultural resources or practitioners exist on or near the access road proposed by alternatives 1 and 2, or by any of the alternatives.

4.1.3 Cultural Practitioners in Areas Outlying Project Alternatives

Cultural practices within and surrounding the project study area included: hula fishing, gathering, cultural gardens, lei making, cultural festivals, and taro patches. The cultural practices varied from a one time annual event (Ulupo Ho'ike) to community organizations' events (e.g. KHS Imu Program) where cultural activities were regularly held. Caretakers of Ulupo are sponsors of the annual *ho'ike* (v. to show, exhibit) to share their accomplishments with the public. The event offers entertainment, demonstrations, tours and stories, including hula performances by several Windward

hula halaus. The public is invited to participate and can learn Hawaiian cultural traditions such as poi pounding, lei making, lauhala weaving and lomi lomi.

CHAPTER 5:
LIST OF CULTURAL INFORMANTS

The following individuals provided information regarding cultural resources within and surrounding the project alternative areas.

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
Burgess, Slade Interviewed 8-9-05	Head Custodian, Kailua High School	**Historical Issues: None** **Cultural Issues: None** Mr. Burgess went to Kailua High School approximately 30 years ago and is the head custodian for the school now, and has never witnessed or heard of any cultural practitioners or resources in the area of the proposed additional access road, neither on the Kailua High School side nor the Kalanianaole side.	BWS security guard supervisor or administrator: the BWS facilities are continually guarded by one per onsite, but possibly not during the summer.
Burrows, Chuck Interviewed 6-14-05	1. Kailua Hawaiian Civic Club Board 2. Aha Hui Malama Ika Lokahi Board	**Historical Issues:** The area was used for kula (dryland) agriculture **Cultural Issues:** 1. Counselors at the the boy's	1. Dr. Vicki Creed: Cultural Surveys Hawaii/Owner of Waihona Aina

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
	3. Kailua Historical Society 4. Kawai Nui Heritage Foundation 5. OHA/Native Hawaiian Historical Preservation Council 6. Kahoolawe Island Reserve Commission	correctional facility built a holua slide in the area that may be of cultural relevance. Was the holua slide built or rebuilt by the counselors? Makes a difference whether it is archaeological significant. 2. The construction of a road may create the potential for disturbance of Kawailoa springs the women's correctional facility had planned to use for possible Kalo cultivation. 3. Mr. Burrows would like to be present during a site visit.	digitized historical Hawaii document service 2. Donna Wong: Hawai`i's Thousand Friends.
Creed, Dr. Victoria Interviewed 6-30-05 Cultural Surveys Hawaii	Cultural Surveys Hawaii: performs cultural impact assessments Owner: Waihona Aina—digital historic Hawaiian documentation	**Historic Issues:** 1. Waimanalo residents may have tracked back and forth to Kailua across the project area. 2. Particular locations of heiau's were sacred because sites were determined by astrologers according to the significance	3. The President of the Kailua Hawaiian Civic Club (wahine) should be called to acquire the

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
	service	alignments of the stars. 3. The name of the ridge extending down from Mount Olomana, across Kamehameha Highway, is Keaniani Ridge. Pu`u O Ehu is located on Keaniani Ridge. Pu'u o Ehu is located behind Kailua town, Keaniani Ridge is located from Ko'olau down to high school, and perhaps Pohakupu community. 4. Harold Stearn's book on Geology of O'ahu describes "Jasper Hill" on Keaniani Ridge in the vicinity of the proposed project site. 5. With regard to the Kawailoa freshwater spring, the 1937 Territory of Hawai`i Statistics book shows buildings around the girl's home and has a decent map of the area. 6. Le Jardin Academy has an original holua slide extending from off Ulumawao, to Kapehi	names of longtime Kailua residents who can function as cultural informants for the project. 4. Chuck Burrows can help identify the "ili" of the area.

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
		Ali`i. **Cultural Issues** 1. There was possibly a taro cultivation project at the Boy's Home in the vicinity of proposed alternatives 1 and 2. 2. The "ili" of the area needs to be defined…Chuck Burrows is a good source. 3. Opposed to this project since the school pre-dates the communities surrounding it and residents knew that when they bought in this area. "Buyer beware." **ADDITIONAL INFORMATION PROVIDED:** 2 maps faxed: 1) 1902 by John Donn to show you Kawailoa ili, in which the Women's, formerly Girls & Boys Homes are	

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
		located. This was the Royal Land of Kawailoa, and belonged to the Crown. You can also see Kanahau the ili closest to Waimanalo, and some distance from the correctional facilities. 2) From in-stream Use Study: Windward Oahu 2/1982 which shows location of high school, and the Maunawili Ditch System Pipeline & Tunnel (nominated to the Historic Sites Division) which pumped water from Kawainui Marsh to Waimanalo sugar fields and appear on one side of the former Boy's home going under Kailua High School to Kawainui Marsh. Historic Sites will perhaps want to comment on that.	
Drigot, Dr. Diane Interviewed 6-14-2005	• Senior Natural Resources Management Specialist U.S. Marine Corps Kaneohe Marine Corp	**Historical Issues: None** **Cultural Issues: None** Dr. Drigot has demonstrated familiarity with the cultural and natural resources of Kawainui Marsh through her involvement with the Kawainui	Donna Wong: Hawai`i's Thousand Friends.

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
	Base • 1990 Kawainui Marsh Flood Damage Mitigation Project EIS Consulted Party	Heritage Foundation and in her correspondence as a consulted party in previous developments in the area, but to the best of her knowledge, she cannot recall any cultural practitioners in the vicinity of the proposed access road.	
Todd Hendricks August 31, 2005 Letter to Perry Small:	Project Coordinator, Imu/Air Riflery Roof Construction Project	"I would like to provide comments/input on the Kailua High School Proposed New Access Road project. I taught science at Kailua High School for 28 years and have been retired for one year now. As part of our Marine Science Program, I ran a boating program and am continuing to run an imu program for the school. The imu site is the corner of the baseball field adjacent to the JAFROTC Building. The imu is a permanent structure which boarders the Kailua High fence line in that area. For the past 10 years, we have been using the imu for fundraising to support the various programs at the school.	

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
		A large segment of the Windward community participates in our imu program. In fact, people from all parts of Oahu bring their food to be cooked in our imu. An example is our Thanksgiving imu, for which we take in a maximum of 400 trays of food to be cooked overnight for a nominal fee. On Thanksgiving morning, anywhere from 800-1000 people come on campus to pick up their cooked food. Throughout the year we have smaller imus for the various school organizations on campus to help in their fundraising efforts. For the past year, we have been working very hard to construct a roof over our imu and the adjoining 80 foot concrete slab used by us for imu set-up and by the air riflery team for rifle practice. We have received donations of labor, equipment, supplies and materials from many businesses and organizations for this roofing project. We are now in the process of completing our roofs.	

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
		Pictures of the construction are enclosed. It is my understanding from our telephone conversation that the proposed new access road will not encroach on any of the existing Kailua High School property. The imu program plays an important role in the cultural and environmental education of our students. It is therefore a major concern of the school and the community to preserve and protect the imu site and prevent any impact to the surrounding structures. Given the time and efforts that the school and the community have put to support and maintain this imu program, it is our utmost concern that the construction of the proposed new access road is carefully planned so as not to impact or remove any existing buildings, grounds, or facilities on the Kailua High School campus.	

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
		I would be more than happy to show you our imu site at your convenience. I look forward to working with you on the completion of the access road in the best interests of the school and the community. I can be reached on my cell phone at 728-7839 or on my home phone at 262-0210. Again, thank you for your time and consideration."	
Ho, Matt Interviewed 8-9-05	Vice Principal, Kailua High School	**Historical Issues: None** **Cultural Issues: None** Mr. Ho has been working at Kailua High School for 6 years and has never witnessed or heard of any cultural practitioners or resources in the area of the proposed additional access road, neither on the Kailua High School side nor the Kalanianaole Highway side.	Slade Burgess, Head Custodian, Kailua High School
Hobron, William K. Hobron	Laundry Maintenance Worker II, Women's	**Historical Issues:** Mr. Hobron recalls that in the 1950s there was a road in the	State Youth Correctional Facility counselors that

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
Interviewed 8-9-05	Community Correctional Center (WCCC)	vicinity of the proposed road. **Cultural Issues:** A youth correctional facility project planted ti plants in the vicinity of the proposed road, probably in same location the archaeologist has identified a similar potential cultural resource to have been found during the archaeological reconnaissance survey. Mr. Hobron has worked at WCCC for 20 years and the ti plants mentioned above, he has never witnessed or heard of any cultural practitioners or resources on the Kalanianaole side of the proposed additional access road.	planted the ti plants in the proposed access road area of potential effect.
Hopfe, Marmie: Interviewed on	Hawaii Youth Correctional Facility (HYCF) Administrator	Ms. Hopfe was unaware of any cultural activities or resources on any of the HYCF grounds, but will alert facilities and maintenance workers and have them contact me if they	

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
8-23-05		know of any resources.	
Kini, Kalei Interviewed 8-8-05	Ko`olaupoko Representative, O`ahu Island Burial Council Member	**Historical Issues: None** **Cultural Issues: None** Mr. Kini has no knowledge of any cultural practitioners or resources in the area. Former State Historic Preservation Division Archaeologist Mary Carney recommended that Mr. Kini be consulted regarding cultural resources in the Kailua area.	Does not know of any potential informants who have not already been contacted.
Seto, Muriel: Interviewed 6-14-05	• Served on the boards of directors for: • Kailua Hawaiian Civic Club • Lani-Kailua	**Historical Issues:** 1. Ms. Seto does not approve of the proposed additional access road project. In her opinion, "it is a waste of taxpayer money, and the existing roads are perfectly	5. Former Kailua Station Fire Chief Anthony Lopez: taught courses on

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
	Outdoor Circle • Hawai`i's Thousand Friends (Chair of Culture) • Delegate to the Congress of Hawaiian People1975-1990s. • Worked to help gain Kawainui Marsh designated on the Ramsar List of Wetlands of International Importance. • Presently authoring on the subject of	adequate, especially through Enchanted Lake, to reach the school. If there are problems in policing the students, that does not justify building a new road to also be policed. There is a great hypocrisy in this purely political proposal. Students would enter the school grounds via the new road to the same place as they would from Enchanted Lakes, where they are now barred from entering." 2. Due to Ms. Seto's opposition to the project, she requested that culture-history information she had previously shared be stricken from the record. Per Ms. Seto's request, cultural information regarding the history and cultural practices of the area have not been included, unless other cultural informants shared similar information, or the particular	culture in the area. 1. Anthony Lopez's son Andy is also knowledgeable about the Kailua area. 2. Counselors at the correctional facility that helped build the holua slide might know of cultural practitioners. 3. Dr. Vicki Creed: Cultural Surveys Hawaii/Owner of Waihona Aina

CULTURAL INFORMANT AND CONTACT INFORMATION	RELEVANT AFFILIATIONS	ISSUES SURFACED	INFORMANT'S SUGGESTED CONTACTS
	the Ahupua`a of Kailua.	information of interest has been documented in other public records.	digitized historical Hawaii document service
Winquist, Tina Interviewed 8-8-05	Olomana School Administrator	Ms. Winquist has never witnessed or heard of any cultural practitioners or resources in the area of the proposed additional access road on the Kalanianaole side.	Will pass my business card to maintenance people who may know of cultural practitioners or resources
Kaleve Tufono-Iosefa Interviewed 8-8-05	HYCF facility administrator.	Ms Tufono Iosefa is unaware of any cultural practitioners or resources in the vicinity of any of the propose project alternatives, but she suggested speaking with Maintenance personnel who may be familiar with cultural resources in the area.	

CHAPTER 6:
AGENCY AND COMMUNITY CONSULTATION

6.1 SHPD Pre-Consultation

In order to gain a better understanding of existing historic resources in the vicinity of the proposed project, on June 15, 2006, a meeting was held with the State Historic Preservation Division (SHPD). Attendees included representatives from SHPD, Scientific Consulting Services (SCS), and Parsons Brinckerhoff (PB). The purpose of meeting was to initiate coordination with SHPD on the archeological and cultural aspects of the project, to clarify proposed methodologies, and to assure mutual understandings and expectations of the next steps in planning and design processes.

A meeting was held with the State Historic Preservation Division (SHPD) to discuss historic resources on June 15, 2005, at the Offices in Kapolei. Attendees included representatives from the State Historic Preservation Department, Scientific Consulting Services (SCS) and Parsons Brinckerhoff. The purpose of meeting was to initiate coordination with SHPD on the archeological and cultural aspects of the project. Clarify proposed methodologies and assure mutual understanding of the next steps in planning and design processes.

Recommendations made by SHPD were as follows:

1. SHPD representatives said subsurface testing and an inventory will be expected due to the fact that the surrounding areas (Ulupo Heiau, Mount Olomana, and Kawainui Marsh) are archaeologically rich in resources, therefore it is logical that the proposed area could likewise contain significant archaeological deposits.

2. Subsurface utilities such as water lines need to be identified prior to contractors breaking ground.

3. SHPD suggested including OHA and Burial Council Representative Kalei Kini on the cultural resources distribution.

4. PB agreed to forward cultural informant and distribution lists to Nathan Napoka for review and comment.

6.2 Community and Cultural Groups

Letters were sent to various community and culturally-related organizations and individuals in the Kailua area, informing them of the proposed project and requesting their project scoping contributions to help document past uses of the project area, as well as potential impacts to community and cultural resources. Some of the issues raised included concerns about over-development, unnecessary expenditure of public funds, visual impacts of the proposed road for Alternatives 1 and 2, and cost and visual impacts of proposed sidewalks.

CHAPTER 7.0
REFERENCES

Carpenter, Richard A. and James E. Maragos, 1989. *How to Assess Environmental Impacts on Tropical Islands and Coastal Areas*, Environmental and Policy Institute, East-West Center; Honolulu, Hawaii.

Engineering Concepts, Inc., "Environmental Assessment for the Kailua 272' Reservoir", Prepared for Board of Water Supply, March 1993.

Engineering Concepts, Inc., "Final Environmental Impact Statement for the Kailua 272' Reservoir," Prepared for Board of Water Supply, July 1996.

Hammatt, Hallett H., Michael Pfeffer and Victoria S. Creed. 1992. Archaeological Inventory Survey of Kailua 272 Reservoir and Access Road, Kailua, Ahupua`a of Kailua, Island of O`ahu, Cultural Surveys Hawaii, Kailua, Hawaii.

Helber Hastert & Fee, Planners, "Draft Environmental Impact Statement, Kailua Gateway Development," Prepared for Kaneohe Ranch, March 1992.

MacKenzie, Melody Kapilialoha. 1991. *Native Hawaiian Rights Handbook*. Native Hawaiian Legal Corporation, Honolulu, Hawaii.

Malo, David. 1991. *Hawaiian Antiquities* (Moolelo Hawaii), translated from Hawaiian y Nathaniel B. Emerson, 1989, *Bishop Museum Special Publication* No 2, 2nd edition. Honolulu, Hawaii.

McAllister, J.G. 1933. *Archaeology of O`ahu*, Bishop Museum, Bulletin 104, Honolulu, HI.

National Register Bulletin # 38, U.S. Department of the Interior, National Park Service, *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, 1992.

Parsons Brinckerhoff Quade & Douglas, Inc., *Traditional Cultural Properties or Practices Report (SDEIS),* Primary Corridor Transportation Project, 2002.

Scientific Consulting Services. "Archaeological Inventory of Proposed Kailua High School Additional Access," 2005.

State of Hawaii, Department of Land and Natural Resources, Rainfall Atlas of Hawaii, June 1986.

State of Hawaii, Office of Environmental Quality Control. "A Guidebook for the Hawaii State Environmental Review Process," June, 2004.

Sterling, Elspeth P. and Catherine C. Summers (comp.). 1978. *Sites of O`ahu*, Department of Anthropology, B.P. Bishop Museum, Honolulu, HI.

United States Department of Transportation, Federal Highway Administration, *Visual Impact Assessment for Highway Projects*, Publication No. FHWA-HI-88-054.

CHAPTER 8.0
LIST OF ACRONYMS

APE	Area of Potential Effect
BWS	Board of Water Supply
BMP	Best Management Practice
CRA	Cultural Resource Assessment
DA	Department of Army
DAGS	Department of Accounting and General Services
DEA	Draft Environmental Assessment
DOE	Department of Education
DP	Development Plan
DPS	Department of Public Safety
DTS	Department of Transportation Services
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
HAR	Hawaii Administrative Rules
HRS	Hawaii Revised Statutes

HYCF	Hawaii Youth Correctional Facility
KHS	Kailua High School
OEQC	Office of Environmental Quality Control
PCTP	Primary Corridor Transportation Project
PB	Parsons Brinckerhoff
SCS	Scientific Consulting Services
SHPD	State Historic Preservation Division
WCCC	Women's Community Correctional Center

APPENDIX A:

HOUSE OF REPRESENTATIVES H.B. NO, 2895 H.D.1

TWENTIETH LEGISLATURE, 2000

STATE OF HAWAII

A BILL FOR AN ACT

RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai`i's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit' in Hawaii. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai`i Revised Statutes, is amended by amending the definitions of "environmental impact statement' or "statement" and "significant effect", to read as follows:

"'Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[.], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.*Approved by the Governor as Act 50 on April 26, 2000* .

APPENDIX C

Kailua High School Proposed Additional Access Road Project

Visual Impact Assessment

Prepared for

The Department of Accounting and General Services (DAGS)

Prepared by

Parsons Brinckerhoff Quade & Douglas, Inc.

December 2006

Table of Contents

Section **Page**

1.0 INTRODUCTION

1.1 Project Background 1
1.2 Purpose and Need 1
1.3 Project Description 3

2.0 SUMMARY OF VISUAL RESOURCES

2.1 Existing Conditions 8
2.2 Potential Adverse Impacts 8
2.3 Potential Beneficial Visual Impacts 13
2.4 Potential Mitigations 13

3.0 METHODOLOGY: SCOPING VISUAL ASSESSMENTS

3.1 Project Characteristics 14
3.2 Typical Cross Section 14
3.3 Related Facilities 15
3.4 Secondary Effects 15
3.5 Visual Environment of the Project 15
3.6 Significant Visual Resource Issues 19
3.7 Visual Impacts and Impact Management 22

4.0 REFERENCES 27

5.0 LIST OF ACRONYNMS 29

List of Figures

Figure **Page**

1 Project Location 2
2 Project Alternatives 4
3 Typical Section 5
4 Potentially Affected Viewplane: Alternatives 1 and 2 10
5 Open Space Map: DPP Koolaupoko Sustainable Communities 11
6 Viewplane Analysis 12
7 Views from WCCC Recreational Area 24
8 Views from Pali Lookout and Old Pali Road 25
9 Views from Pali Hairpin Turn, Scenic Point Makai of Townbound Tunnels 26

1.0 INTRODUCTION AND SUMMARY

1.1 Project Background

The Pohakupu neighborhood of Kailua has been trying to build an alternative road to access Kailua High School (KHS) for approximately 25 years, possibly as a result of many serious injuries to neighborhood pedestrians over the years. The Department of Accounting and General Services (DAGS) is now planning for an additional access to KHS in order to alleviate traffic and improve safety in the neighborhoods surrounding the school, and the purpose of this report is to analyze and assess potential impacts upon visual resources that could occur as a result of implementation of the proposed project alternatives (see Figure 1).

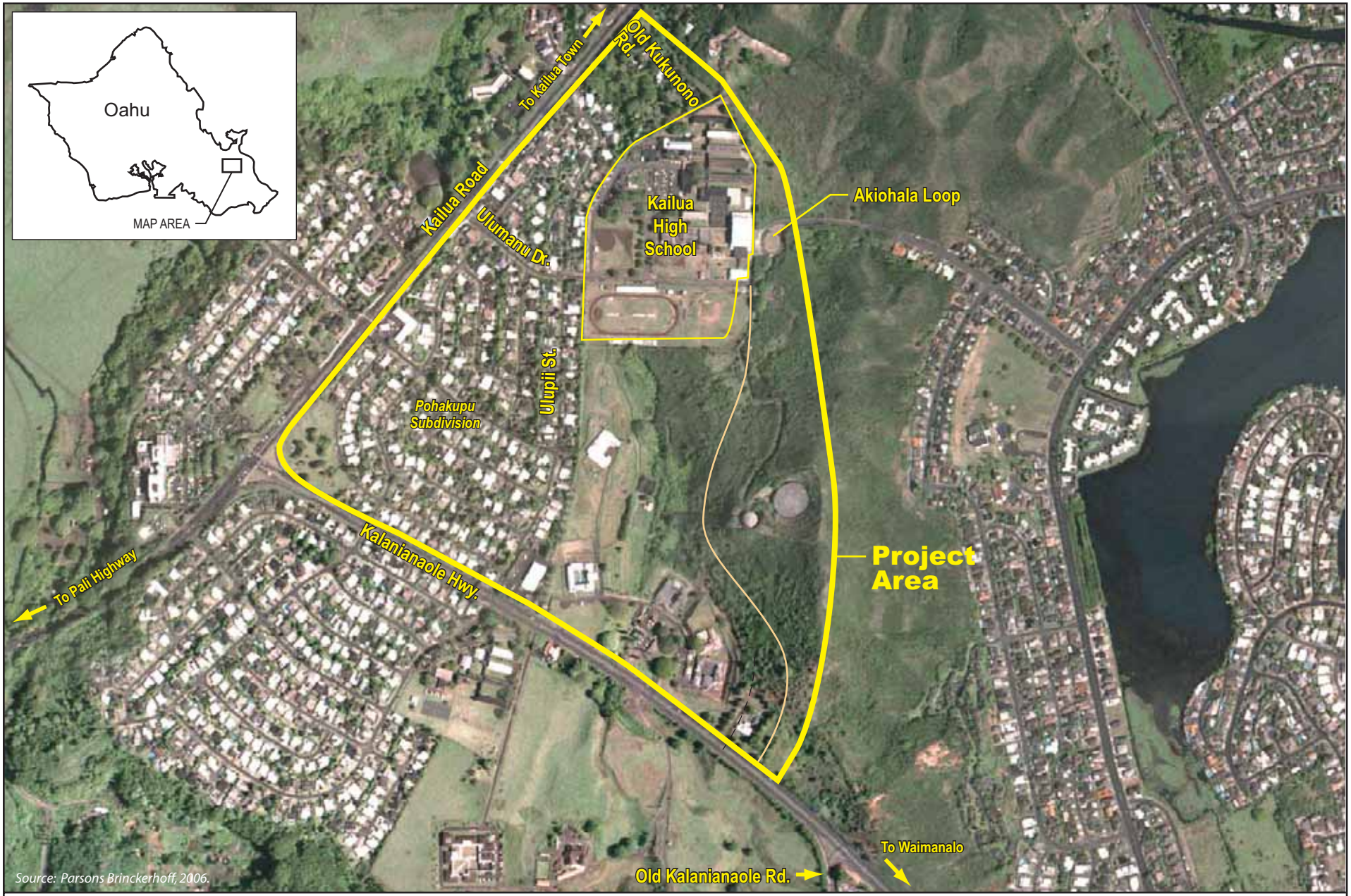
1.2 Purpose and Need

1.2.1 Proposed Project Purpose and Need

The project purpose and need is to provide decreased traffic though Pohakupu subdivision and increased safety for vehicular and pedestrian access to Kailua High School (KHS), while minimizing potentially negative affects on adjacent neighborhoods and communities due to altered traffic patterns and access routes.

1.2.2 Purpose and Need of Visual Impact Assessment

Because State lands and funds will be used to implement one of the proposed project alternatives, a Draft Environmental Assessment (EA) is being prepared pursuant to the Hawaii Revised Statutes (HRS), Chapter 343 environmental review process. In addition, a Visual Impact Assessment (VIA) is intended to comply with Chapter 343's mandate to disclose potential environmental impacts of a proposed project using State funds or lands. More specifically, this VIA attempts to address significance criteria (12) listed in the State of Hawaii's Office of Environmental Quality Control's (OEQC) *A Guidebook for the State Environmental Review Process*, which requires that an agency will determine if an action may have a impact on the environment if it "substantially affects scenic vistas and viewplanes identified in county or state plans or studies."



N

SCALE:

0 1/8 mi. 1/4 mi.

Project Location

Kailua High School Additional Access
Visual Impact Assessment
Figure 1

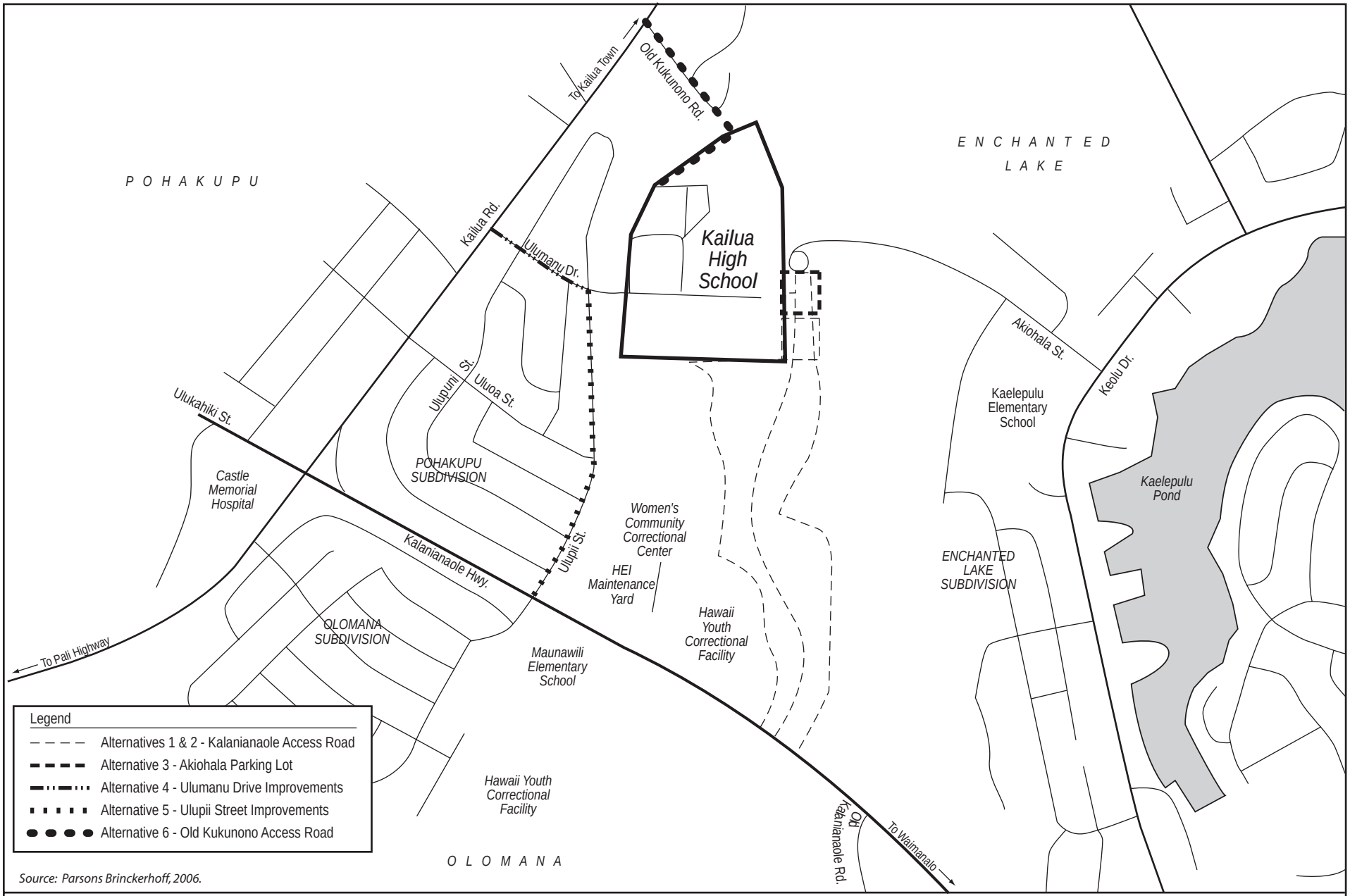
1.3 Project Description

Six alternatives (Alternatives 1-6) and the "No-Build" alternative (Alternative 7) have been developed to meet the purpose and need for the project, and are described as follow (see Figure 2). All the alternatives except the proposed road (Alternatives 1 and 2) were determined to have little or no impact upon visual resources in their respective vicinities

1.3.1 Alternatives 1 and 2: Construction of New Roadway and Parking Lot from Kalanianaole Highway to Kailua High School Property

Alternatives 1 and 2 propose construction of a new roadway from Kalanianaole Highway to Kailua High School property (Figure 2). Alternative 2 is distinguished from Alternative 1 by its restrictions on the Ulumanu Drive KHS front entrance. With Ulumanu Drive entrance restrictions in place, Alternative 2 best meets the purpose and need in comparison to the other alternatives considered, by redirecting the greatest number of vehicles to the new access road. A lack of DOE support for the restricted access remains an unresolved issue for Alternative 2. Both alternatives 1 and 2 would divert KHS traffic to the new roadway, thereby relieving Pohakupu subdivision of the traffic. The road would be built to modern safety standards, resulting in increased safety for motorists and pedestrians alike.

Both Alternatives 1 and 2 consist of two primary actions: the construction of the new access road and the construction of a new student parking lot at the makai terminus of the access road. The new road will provide direct access to the high school from Kalanianaole Highway through existing State land. The connection point will have adequate sight distance at the Kalanianaole entrance, and the road will traverse Department of Public Safety (DPS) property from the Kalanianaole Highway to the rear of Kailua High School (KHS), to a location near the existing Board of Water Supply (BWS) access road. The road will have two paved lanes, one in each direction, and each lane will be 12-feet wide, with a ten-foot shoulder and a six-foot wide (see Figure 3) sidewalk.



Source: Parsons Brinckerhoff, 2006.

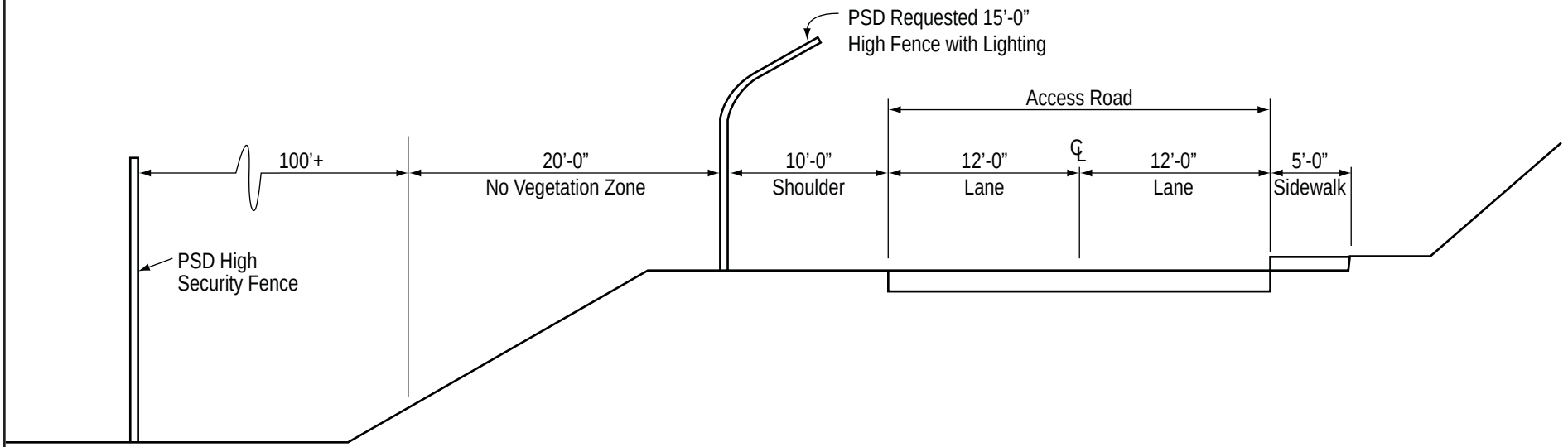
N

SCALE:

0 1/8 mi. 1/4 mi.

Project Alternatives

Kailua High School Additional Access
Visual Impact Assessment
Figure 2



KAILUA HIGH SCHOOL ACCESS ROAD
ADJACENT TO PSD HIGH SECURITY AREA

Typical Section

Kailua High School Additional Access
Visual Impact Assessment
Figure 3

A small parking lot (could be as large as approximately 30,000 square feet—same size as present student parking) will be located on the east side of the KHS connection point on DPS land, and it is included in these alternatives. The actual size would be determined during final design. No connection will be made from the present Akiohala drop to the new parking lot, no cross-campus traffic will be permitted, and the turn around from the Akiohala drop will remain unimproved.

The following list describes major items of work anticipated.

- Construct a parking lot.
- Construct a two-lane access road.
- Install sidewalk on the east edge of the access road throughout the entire project, from the drop-off and parking lot to the campus, in accordance with Americans with Disabilities Act (ADA) requirements and Hawaii Revised Statutes (HRS 103-50).
- Design drainage systems in accordance with the latest versions of the HDOT Criteria for Highway Drainage and the FHWA Hydraulic Engineers Circulars and Hydraulic Design Series.
- Implement permanent post-construction Best Management Practices (BMPs) to decrease the amount of stormwater runoff and improve the water quality of stormwater runoff discharging from the project site.
- Install signs and pavement markings.
- Install streetlights and other safety fixtures that comply with National Cooperative Highway Research Program (NCHRP-350) in accordance with the Roadside Design Guide.
- Incorporate the following security specifications required by Department of Public Safety because the road will traverse their parcel in close proximity to the Women's Community Correctional Center (WCCC) facility: 1) security fencing, roadway illumination, signage; 2) video surveillance; 3) Access Roadway Gate[s]; 4) controlled access granted to WCCC; and 6) a vegetation "no-pass" strip.

1.3.2 Alternative 3: New Akiohala Parking Lot

Alternative 3 proposes to connect the present Akiohala drop-off to a parking lot (could be as large as approximately 30,000 square feet—same size as present student parking) on the east side of the campus near present drop-off area (Figure 2). The actual size would be determined during final design. No cross-campus traffic will be allowed because it interferes with on-campus foot traffic. The present and proposed parking lots will be separate, and students will have the choice to access either one. KHS issues of security, labor and lighting are still unresolved.

1.3.3 Alternative 4: Ulumanu Drive Sidewalk Improvements

Alternative 4 proposes sidewalk improvements to Ulumanu Drive--the main entrance to KHS (Figure 2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.3.4 Alternative 5: Ulupii Street Sidewalk Improvements

Alternative 5 proposes sidewalk improvements to Ulupii Street to allow traffic to utilize Ulupii to get from Kalanianaole to the Ulumanu Drive main entrance (Figure 2). The project may absorb costs of improvements so the homeowners do not have to pay frontage fees. The City owns the street, and there may be jurisdictional issues relating to City ownership and State initiated and implemented improvements.

1.3.5 Alternative 6: Makai "Old Kukanono" Access Road

Alternative 6 proposes to connect Kailua Road to the campus student parking lot via a new (shorter) access road at the interface between Pohakupu subdivision (makai end near Uluopiho Loop) and the private homes (sometimes referred to as Old Kukanono--see Figure 2). This option would generally target those that are already using the Ulumanu Drive main KHS entrance. The new road would have to follow the usually dry streambed/drainage ditch and it would probably require condemning 1-3 homes. Although this new road connects many of the required project elements, questions related to reliability and safety of roadway use adjacent to a dry streambed/drainage ditch remain unresolved issues. Additionally, the potential for three residential properties to have Right of Way impacts is also a significant unresolved issue. Together, the two unresolved issues of constructing a road in a dry streambed/drainage

ditch and displacement of three residential properties have deemed Alternative 6 unworkable and unworthy of further consideration.

1.4.6 Alternative 7: No Build

Alternative 7 proposes to maintain the status quo, with no proposed project improvements. Communities affected by KHS activities would remain unchanged and would maintain present levels of traffic and pedestrian safety.

2.0 VISUAL RESOURCES

2.1 Existing Conditions

Alternatives 1,2, and 3: Mount Olomana, recognized as a sacred Hawaiian place, is located less than one mile from Alternatives1 and 2, and the project area represents one of the last significant uninterrupted terrestrial green belts leading down to Kailua Town.

Alternatives 4 and 5: The visual environment for these alternatives is characterized by single-family residential neighborhoods without sidewalks and with minimal drainage features.

Alternative 6: The visual environment for this alternative is characterized by a private road with single-family residential dwellings and no sidewalks or drainage features.

2.2 Potential Adverse Impacts

Alternatives 1 and 2

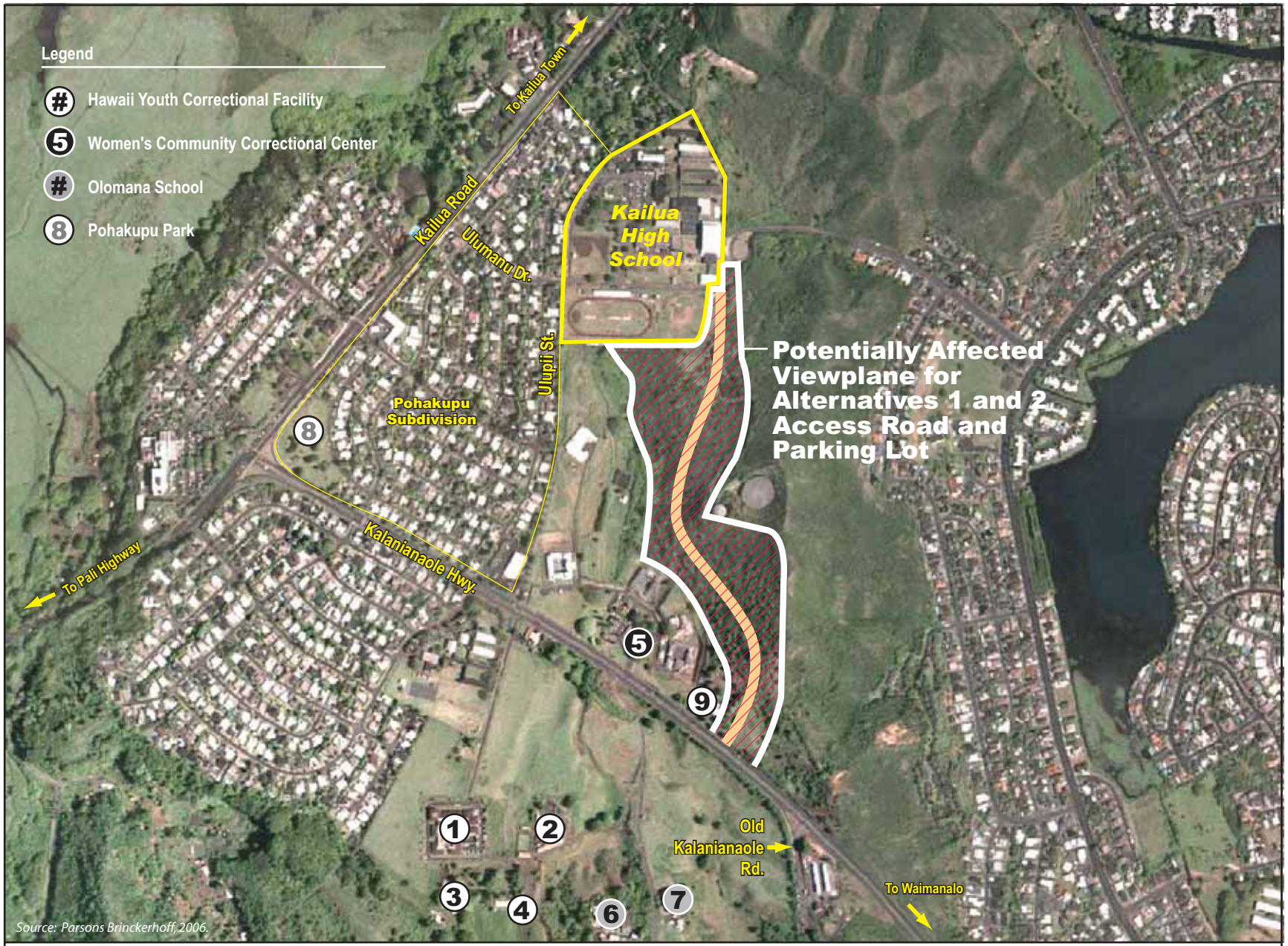
The project footprint is anticipated to be small, consisting a road with two paved lanes, one in each direction, and each lane will be 12-feet wide, with a ten-foot shoulder and a six-foot wide (Figure 3) sidewalk. Additionally, an ADA compliant pedestrian route will be installed throughout the entire project on the eastern edge of the access road in accordance with Americans with Disabilities Act (ADA). Possible additions such as bicycle paths and fences and/or caged enclosures of the road could affect the appearance of the project as its design needs continue to evolve.

The views from three correctional facilities will be affected: the State of Hawaii's Women's Community Correctional Center (WCCC), the Youth Correctional Facilities (HYCF), and Olomana School. The project will be clearly visible from many of the institutional buildings housing State corrections and education populations on Mount Olomana. Due to decreased viewing distance, impacts will be greatest at the WCCC and HYCF facilities directly adjacent to the proposed project area (Figure 4).

Pohakupu Park views will be unaffected due to the fact the park is 0.5 to 0.75-mile away from the hillside road location proposed for Alternatives 1 and 2 (Figure 4), and also because the Keaniani Ridge (also known as Pu`u O Ehu Ridge) views from the park are mostly blocked by tall trees except for very limited and intermittent glimpses of the hillside.

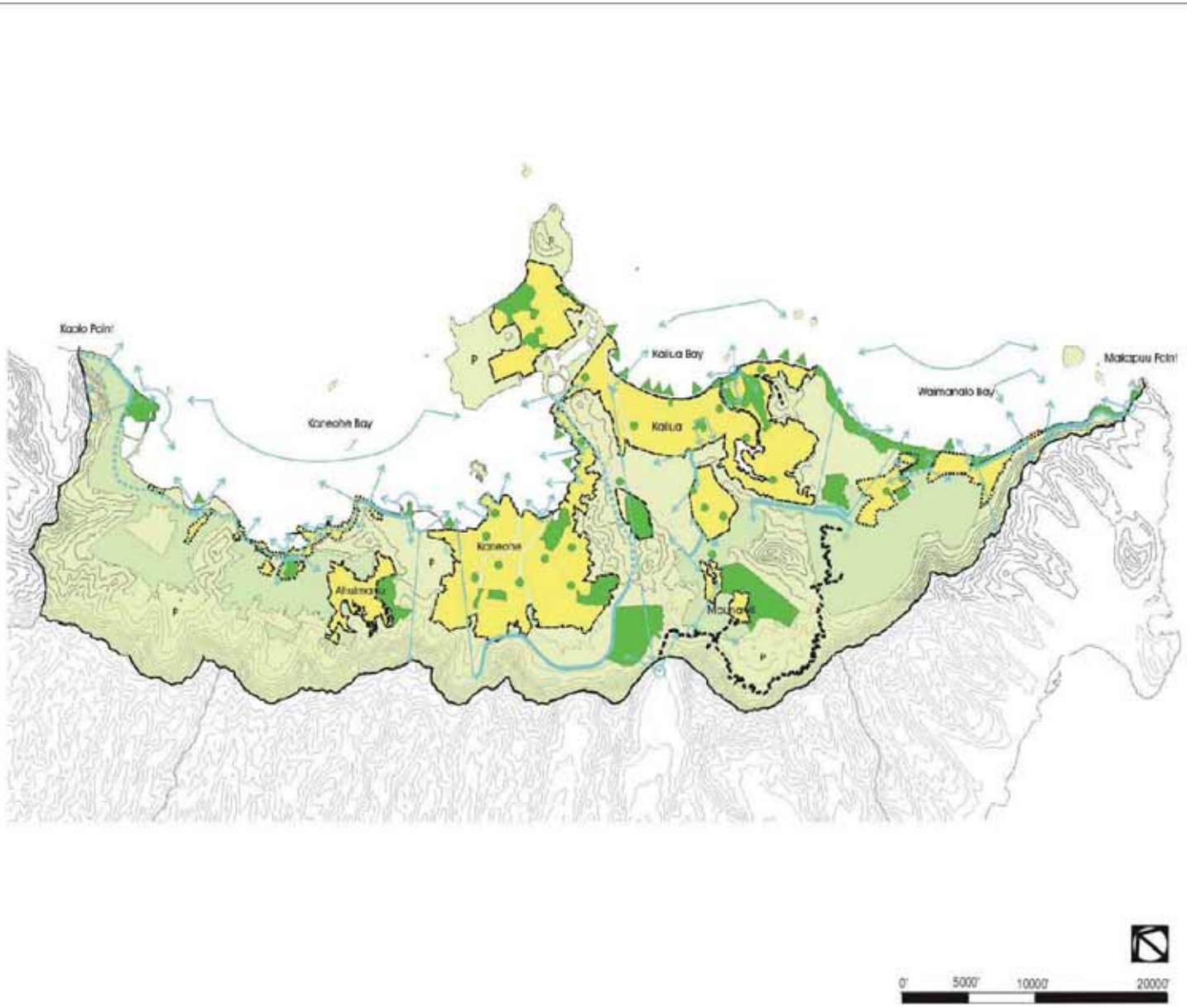
The development of an access road is not anticipated to adversely impact scenic vistas or view planes identified in County or State plans or studies. In the Kailua area, the Ko'olaupoko Sustainable Communities Plan calls for preservation of scenic views of ridges, upper valley slopes, shoreline areas from trans-Ko'olau (e.g. the Pali Highway--Honolulu to the Windward Side) and coastal highways; from coastal waters looking mauka (e.g. looking mauka from Kailua Beach); and from popular hiking trails that extend toward the Ko'olau Mountain Range and mauka from Kawainui Marsh. None of those aforementioned community plan concerns are expected to be impacted by the proposed project. The Ko'olaupoko Sustainable Communities Open Space Map (Figure 5) identifies distant views from the Pali Lookout and at the hairpin turn parking area, but those views are not likely to be impacted due to the approximate 2-3 mile distance between those views and the proposed project area. Distant views from the Pali Lookout, the Pali Highway hairpin turn (i.e. at the Maunawili Valley hikers' parking) and for those walking on the Old Pali Road will not be impaired (Figure 6).

For hikers, some of Mount Olomana's views will be affected to an extent (Figure 6) Keaniani Ridge (Pu`u O Ehu Ridge) represents one of the few densely vegetated open spaces visible in the makai direction from Mount Olomana, and the ridge comprises the lower slope of Mount Olomana on the makai side of Kalanianalole.



Potentially Affected Viewplane for Alternatives 1 and 2 Access Road and Parking Lot

Kailua High School Additional Access
Visual Impact Assessment
Figure 4



Preservation Areas and Nature Parks

Agricultural Areas

Regional, District, and Beach Parks; Golf Courses; and Cemeteries

Urban Areas

Community and Neighborhood Parks

Shoreline Access

Mountain Access

Significant Views from Stationary Point

Continuous Views

Intermittent Views

Urban Community Boundary

Rural Community Boundary

Agriculture/Open Space/ Preservation Boundary

KOOLAUPOKO

SUSTAINABLE COMMUNITIES PLAN

Map A-1: Open Space

Department of Planning and Permitting
City & County of Honolulu
August 2000

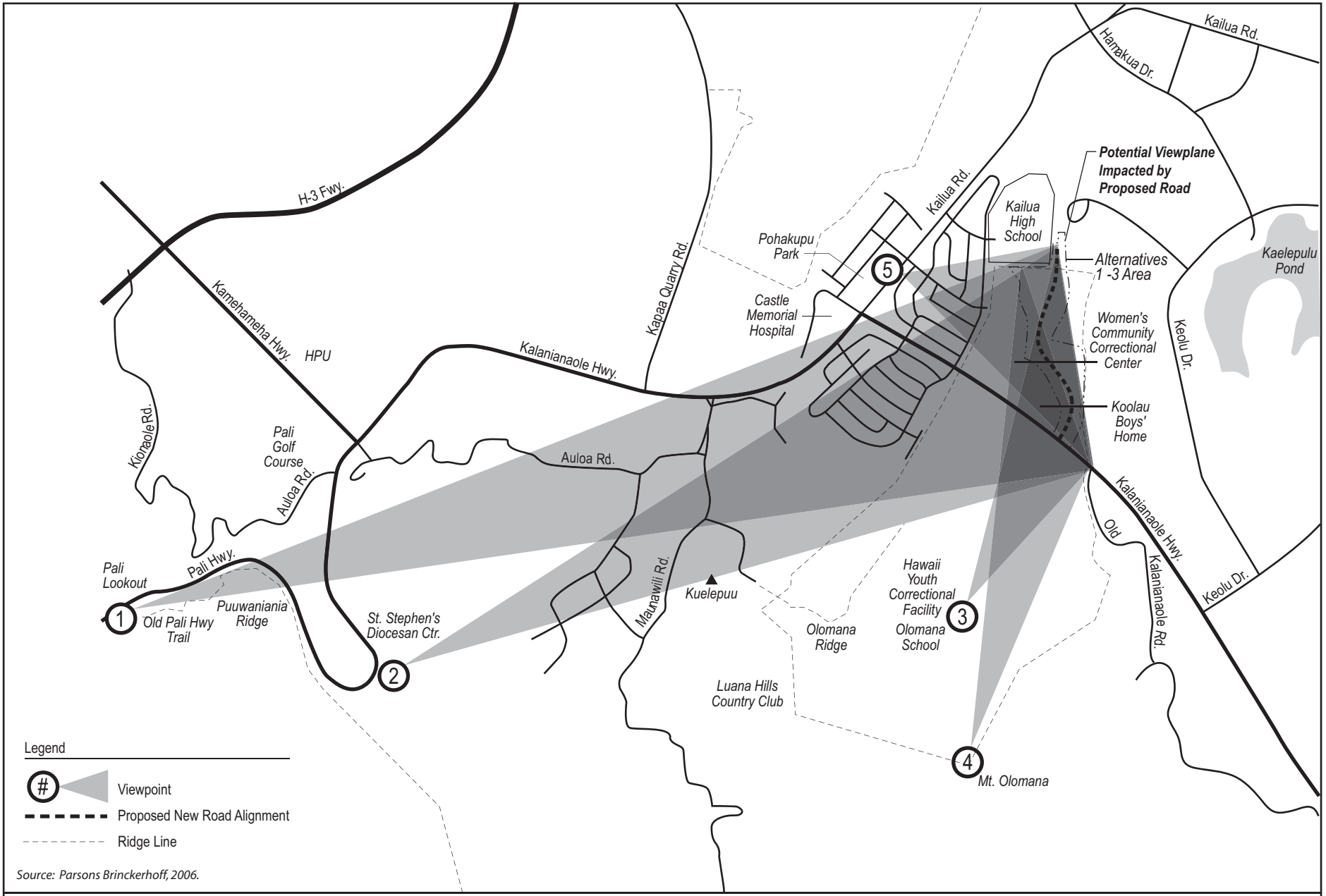
N

SCALE:

0 1/8 mi. 1/4 mi.

Open Space

Kailua High School Additional Access
Visual Impact Assessment
Figure 5



Viewplane Analysis

Kailua High School Additional Access
Visual Impact Assessment
Figure 6

Alternatives 1-3: These alternatives all include a parking lot (could be as large as approximately 30,000 square feet—same size as present student parking) in the vicinity of the present KHS Akiohala drop-off, but due to the fact the parking lot location is shielded from these areas by the natural topography of the hillside, there is no anticipated visual impact upon Keolu Hills, Enchanted Lake, WCCC, HYCF, or Mount Olomana.

Alternatives 4 and 5: New sidewalks within the residential subdivision will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes along Ulupii and Ulumanu Drives.

Alternative 6: New sidewalks within the residential neighborhood will contribute to an aesthetic of more pavement and less vegetation in the areas fronting the homes of Old Kukanono Community.

2.3 Potential Beneficial Visual Impacts

Alternatives 1 and 2: No beneficial visual impacts are anticipated to result from the proposed project, except possibly along the edge of the Kalanianaole Highway at the proposed road's entry point, assuming landscaping and maintenance of the entryway will provide a more pleasant aesthetic than the existing overgrown koa-haole forest.

Alternatives 3-6: No beneficial visual impacts are anticipated to result from the proposed project for these alternatives.

2.4 Potential Mitigations

Alternatives 1 and 2:

The Proposing Agency (DAGS) recognizes the open space value of Keaniani Ridge (Up's o Ehu Ridge) and views from Mount Olomana and facilities in the vicinity, and is committed to designing the development to minimize visual and scenic impacts and the loss of open space.

Impacted views of the WCCC, the HYCF, and Olomana School institutional settings could be mitigated through landscaping the road. Cultural informants have suggested that loulu palms and Hala Ula—famous red trees of Kailua--would be appropriate due to their historic association with Kailua.

3.0 METHODOLOGY: SCOPING VISUAL ASSESSMENTS

The methodology for this Visual Impact Assessment is primarily derived from the U.S. Department of Transportation, Federal Highways Administration, Office of Environmental Policy manual, Visual Impact Assessment for Highway Projects (Publication No. FHWA-HI-88-054).

3.1 Project Characteristics

What are the magor project design standards (capacity, access, speed, geometry)?

Alternatives 1 and 2: The proposed road and parking lot for Alternatives 1-2 are anticipated to facilitate the movement of approximately 200-400 vehicles trips per day by accessing Kailua High School via Kalanianaole Highway. The anticipated speed will be 25 miles per hour (mph), and will be located within a 100-200 meter-wide corridor throughout the project length--approximately one mile in length—although the road and shoulders will be approximately twenty-eight feet wide, with an ADA-compliant pedestrian path that will run the project length.

3.2 Typical Cross Section

What is the typical highway cross-section (roadway, roadside slopes and drainage, right-of-way)? What major structures or appurtenances will be required? Alternatives?

The project footprint is anticipated to be small, consisting a road with two paved lanes, one in each direction, and each lane will be 12-feet wide, with a ten-foot shoulder and a six-foot wide (Figure 3) sidewalk. An Americans with Disabilities Act Accessible Guidelines (ADAAG) compliant pedestrian route will be installed throughout the entire project on the east edge of the access road and will connect to KHS's on-campus ADAAG compliant path.

3.3 Related Facilities

Are any highway-related facilities (such as rest areas and maintenance yards) part of the project? What construction areas (borrow pits, spoil areas) will be needed?

If the project is implemented, the contactor will need a staging area for ready-mix cement trucks, perhaps concrete pump trucks, and asphalt paving equipment for the new road surface. Earth moving and grading equipment will be used on the project and will be parked and maintained in the contractor's base yard, the location of which has not been determined. And lastly, the grounds utilized will eventually be graded and planted with ground cover plants and restored to closely resemble its surroundings, thus mitigating and nullifying any potential impacts upon visual resources that could result from implementation of any of the proposed project alternatives 1-6.

3.4 Secondary Effects

What secondary effects (such as development at interchanges or conversion of land from rural to urban uses) may result from the project?

Kailua is already urbanized, as are much of the surrounding areas of Kaneohe and Waimanalo. Improved KHS access as a result of implementation of any of the proposed alternatives 1-6 may potentially contribute to some small degree of increased urbanization due to physical and visual alterations resulting from implementation of any the project alternatives--the extent to which is judged to be indiscernible from the perspective of creating significant visual impacts.

3.5 Visual Environment of the Project

3.5.1 Landscape Components of Region and Project Area

What landscape components (landform, water, vegetation, and manmade development) are characteristic of the regional landscape and the immediate project area?

3.5.1.1 Visual Landform Components

Regional Landform

The underlying regional landform consists of mountains, ridges, valleys, inland water bodies, and flat coastal sandy plains, and beaches.

Project Area Landform

Alternatives 1-3: The project areas for Alternatives 1-3 consist primarily of steep to moderately sloped hillside along Keaniani Ridge, which runs from Mt. Olomana, across Kamehameha Highway, and traverses the entire project length from Kalanianaole to Kailua High School. The road and parking lot options will be graded into the hillside, below the ridgeline; therefore there is no anticipated visual impact to the Enchanted Lakes/Kaelepulu Pond-side of the ridge.

Alternatives 4 and 5: Landforms in the neighborhood of Pohakupu consists of gradually graded streets and residential lots. Alternatives 4 and 5 propose grading the residential front yards of residents of Ulumanu Drive and Ulupii Street in order to construct sidewalks and drainage facilities, thus having the effect of somewhat "flattening" the topography of the small plots of land that constitute Pohakupu's residential streets.

Alternative 6: This alternative consists primarily of steep to moderately sloped hillsides along the area known as "Old Kukanono" and traverses the entire project to Kailua High School. The road will be graded into the hillside, below the ridgeline known as Pu'u O Ehu Ridge, overlooking Kailua Town and Oneawa Canal; therefore there is no anticipated visual impact to Kailua or Coconut Grove residents.

3.5.1.2 Visual Water Components

Regional Water

Regional water components include streams, waterfalls, marshes, ponds, bays, and ocean.

Considering Kawainui Marsh is the largest freshwater body in the State, it contributes significantly to open space and views of the surrounding Kaneohe, Kailua, Maunawili, and Nuuanu Pali areas.

Project Area Water

Although the project area has been known to flood, retain water and act as an intermittent marshland during heavy rains, much of the parcel of land proposed for project use is often dry and contains no water features.

3.5.1.3 Vegetation Visual Components

Regional Vegetation

The dominant regional vegetation is characterized to a large extent by those species that exist on the hillside above the project: Mt. Olomana has non-native species of Koa Haole and introduced grasses, with some trees such as Norfolk and Cook Pines specifically planted with the intent to reforest cattle denuded areas.

Alternatives 1-3 Project Area Vegetation

The dominant vegetation in the project area consists of Koa Haole shrubs 10-20 feet high and introduced grasses on sloped uplands and gradually sloped lowlands previously disturbed for agriculture, with approximately 90% of the vegetation being of non-native origin. The vegetation in the proposed project areas contributes to a "dense green" swath of land that remains one of the only remaining undeveloped areas in the project vicinity.

3.5.1.4 Manmade Development

Regional Manmade Development

The Kailua region consists of thoroughly urbanized residential development marbled with small business districts that support the one largest urban populations on the island.

Project Area Manmade Development

Manmade development on the proposed alternatives 1-3 project sites consist of abandoned City and County of Honolulu Board of Water Supply facilities that contain miscellaneous stored equipment and water storage facilities not in use. Located a short distance north of the project site are the WCCC and HYCF correctional facilities, which consist of modular and warehouse-type facilities habitation facilities used to house correctional tenants.

3.5.1.5 Project Visibility

Where is the project likely to be seen from?

The project will be clearly visible from many of the institutional buildings housing State corrections and education populations on Mt. Olomana, in addition to some of Mt. Olomana's peaks, which are frequented by hikers. Additionally, due to decreased viewing distance, similar populations will be impacted to an even greater extent at the WCCC and HYCF facilities directly next to the proposed project area (see Figure 4). Distant views from the Pali Highway and Old Pali Road will be impacted to an insignificant extent (see Figure 6). Mt. Olomana's views from the peaks will be affected for hikers who choose to make the ascent. (Figure 6).

3.5.1.6 Visually Distinct Landscape Units

What visually distinct landscape units are identified within the immediate project area?

The landscape type is predominantly low-lying forest consisting of 10-20 foot shrubs located on the gradually-to-steeply graded upper slopes to top of Keaniani Ridge, on the makai-side of Kamehameha Highway. The landscape form is the foothill of Mt. Olomana, and upper slopes of the ridge leading to Kailua Town. The landscape unit is Mt.Olomana's lower slopes and hillside and hilltops separating Kawainui Marsh and Kaelepulu Pond, and mauka of Kailua Town. This landscape unit works with Mt. Olomana to transition from the entirely natural landforms of Maunawili Valley's mauka Ko`olau's, to the thoroughly urbanized perimeters of Kawainui Marsh, Coconut Grove, Enchanted Lakes, and Kailua Town.

3.6 Significant Visual Resource Issues

3.6.1 Project Alternative

How would the project alternative affect the landscape components which are present within the visual environment?

The topographically lowest areas in the "potential zone of impact for access road"(Figure 1-2), farthest from the ridge and closest to the WCCC and HYCF would be the preferable positioning of the road alignment because it would be less likely to create a distinctive transition from the buildings in the correctional facilities, to the natural forested areas on the hillside. Lower alignment of the road would visually blend-in better because it would appear more a part of the existing facilities, and less of an addition to the natural landscape unit within the potential project area.

3.6.2 Existing Visual Character of Project Environment

What is the existing visual character of the project environment (e.g., form, line, color, texture, and dominance, scale, diversity, continuity) and how compatible would project alternatives be with this character?

3.6.2.1 Form

The project area consists of a gradually-to-intensely sloping hillside leading up to a ridgeline that moderately slopes downhill to Kailua Town; surrounding land uses consist of square and rectilinear buildings set within undeveloped zones that buffer the institutions from residential neighborhoods.

3.6.2.1 Line

Lines are characterized by Keaniani Ridge throughout the project length at the highest elevations; and square and rectangular roofs of buildings in some areas within the lower project elevations.

3.6.2.3 Color

The proposed project area is characterized by green forested areas consisting of low-shrubs, introduced grasses, Koa Haole trees; with a few areas in the more sloped area

of the ridge showing brown soil exposed through hillside erosion and slipping processes.

3.2.6.4 Texture

Texture of the proposed project site is characterized by variations in height and types of forest vegetation, with almost 50% of the visual "coarseness" consisting of 10 to 20 foot-tall Hale Koa shrubs.

3.2.6.5 Dominance

Keaniani Ridgeline, in the vicinity of the proposed road, is a dominant landform due to its appearance as a forested undeveloped hillside among institutional and residential uses. Likewise, the urban uses of WCCC and HYCF are dominant components of the low-lying proposed project areas.

3.2.6.6 Scale

Natural and manmade landforms at present are somewhat balanced, with either nature or urbanization taking a dominant visual role depending on the viewpoint in and viewplane in question. From Kalanianaole Highway looking upward, the natural forested ridgeline is a prominent feature. Looking downward, the WCCC facilities stand out as prominent landcovers.

3.2.6.7 Diversity

Diversity of the project site is limited to variations in slope of the project-side of the ridgeline, while there is great diversity between the proposed project's natural forested areas and the manmade WCCC and HYCF facilities abutting and adjacently juxtaposed.

3.2.6.8 Continuity

Between the forested project area and nearby WCCC and HYCF facilities, continuity is low, as the different land uses create dramatically different visual relationships that do not reflect interconnections. Continuity among adjacent and abutting manmade facilities is high. The natural landform's continuity is high as well, with small color and texture variations occurring only in erosion and vegetation anomalies on the hillside.

3.6.3 Significant Viewer Response Issues

3.6.3.1 Groups Likely to View Project

What major viewer groups are likely to see the project?

Major viewer groups anticipated to see the project include: juvenile and adult female inmates at WCCC; juvenile male inmates at the HYCF on the makai-side of Kalanianaole; male high school students at Olomana School; and hikers who ascend the peak of Mt. Olomana.

Viewer groups who will experience a lesser visual impact include: Waimanalo and Kailua-bound motorists looking makai at the foothill of Mt. Olomana, and distant views of the proposed project area from the vicinity of the Pali Highway and Pali Lookout (Figure 1-1).

3.6.3.2 Viewer Activity and Awareness

How are the viewer activity and awareness likely to affect the attention that different groups pay to the project and its visual environment—both viewers from the road and of the road?

3.6.3.3 View from the Road

The primary viewer activity from the road will be commuting to school. One might anticipate the level of awareness during this commute would be commensurate with various considerations such as the punctuality of the driver, and the amount of time they can afford to allocate to appreciating the view. Of course, from the road, the dominant visual element will be the WCCC facilities.

3.6.3.4 View of the Road

Kalanianaole Highway motorists will not be afforded a lasting and dominant view of the road from the highway due to prevailing highway speed and geographic visibility of the road from the highway. While incarcerated prisoners will have a view of the road from their dormitory and outdoor recreation areas, their level of awareness of the road and its users will most likely vary from inmate to inmate, depending on varied personal interests.

3.6.3.5 Recognizable Cultural Resources: Local, Regional, and National

Are there any visual resources in the project environment that are particularly important to local viewers? Are there any districts, sites, or features that are regionally or nationally recognized for their cultural significance?

Mt. Olomana hikers will be impacted due to their proximity—less than one mile—and due to the fact the project area represents on of the last significant uninterrupted green belts in the area leading down to Kailua. Mt. Olomana is recognized as a sacred Hawaiian place, but the view of the mountain will be unaffected by the road.

Within a mile to the East lies Kawainui Marsh, designated on the RAMSAR List of Wetlands of International Importance, and a archaeological treasure trove of pre-contact sites, features, and comparatively old radiocarbon dates that support the idea that Kailua was one of the first places on Oahu to be inhabited by Polynesians.

3.6.4 Impact upon Future Options

Is the project thought to threaten or support expectations for the future appearance of any areas it traverses?

At this point the project footprint is anticipated to be small, but in the event the potential for growth exists, additions such as pedestrian and bicycle paths and fences and/or caged enclosures of the road could affect the appearance of the project as its design needs develop. In general, roadways are considered to preserve open space.

3.7 Visual Impacts and Impact Management

3.7.1 Likely Adverse and Beneficial Visual Impacts

In summary, what significant visual impacts, if any, appear likely? Include both adverse and beneficial impacts.

3.7.1.1 Adverse Visual Impacts

The project will be clearly visible from many of the institutional buildings housing State corrections and education populations on Mt. Olomana, and assuming a preference for the natural forest landcover over manmade roadways, the visual impact of the

proposed road will be negative. Additionally, due to decreased viewing distance, similar populations will be impacted to an even greater extent at the WCCC and HYCF facilities directly next to the proposed project area (see Figure 7). Distant views from the Pali Highway and Old Pali Road will be impacted to an insignificant extent due to a viewing distance of 2-3 miles (see Figure 8). Mt. Olomana's views from the peaks will be affected for hikers who choose to make the ascent. Views from the Pali Highway hairpin turn near St. Stephens Diocesan Center and near the townbound tunnels are not anticipated to be impacted (see Figure 9), as only Kawainui Marsh is visible in the distance, and neither Pohakupu nor Keaniani Ridge are visible.

3.7.1.2 Beneficial Visual Impacts

No beneficial visual impacts are anticipated to result from the proposed project, except possibly along the edge of the Kalanianaole Highway at the proposed road's entry point, assuming landscaping and maintenance of the entryway will provide a more pleasant aesthetic than the existing overgrown Hale Koa forest.

3.7.1.3 Alternatives Mitigations

What alternatives might avoid, minimize, or reduce any adverse visual impacts and by how much?

3.7.1.4 Potential Project Mitigations

What actions might rectify or compensate for adverse visual impacts and by how much?

To mitigate potential view encroachments, one cultural informant suggested that the road be landscaped with trees characteristic of historic Kailua: loulu palm trees and Hala Ula—famous red trees of Kailua.



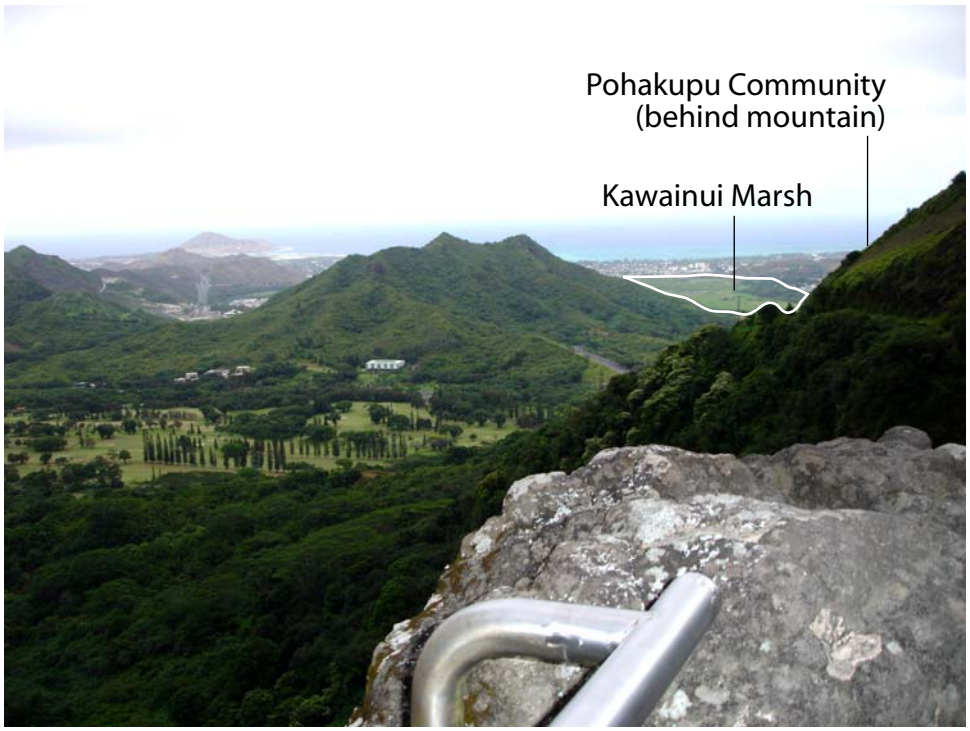
View 1 from WCCC Recreational Area



View 2 from WCCC Recreational Area

Views from WCCC Recreational Area

Kailua High School Additional Access
Visual Impact Assessment
Figure 7



View from Pali Lookout



View from Old Pali Road

Views from Pali

Kailua High School Additional Access
Visual Impact Assessment
Figure 8



View from the Pali Highway Hairpin Turn



View from Pali Highway Scenic Point Before Townbound Tunnels

Views from Pali
Kailua High School Additional Access
Visual Impact Assessment
Figure 9

4.0 REFERENCES

Belt Collins & Associates, "Draft Environmental Impact Statement for the Waahila 180 and Waahila 405 Reservoirs, Manoa, Oahu," April 20, 1989.

Carpenter, Richard A. and James E. Maragos, 1989. *How to Assess Environmental Impacts on Tropical Islands and Coastal Areas*, Environmental and Policy Institute, East-West Center, Honolulu, Hawaii.

Chu, M.S. and R.B. Jones, "Coastal View Study," Prepared for City & County of Honolulu, Department of Land Utilization, 1987.

Engineering Concepts, Inc., "Environmental Assessment for the Kailua 272' Reservoir", Prepared for Board of Water Supply, March 1993.

Engineering Concepts, Inc., "Feasibility Study for the Kailua 272' Reservoir," Prepared for Board of Water Supply, June 1992.

Engineering Concepts, Inc., "Final Environmental Impact Statement for the Kailua 272' Reservoir," Prepared for Board of Water Supply, July 1996.

Hawaii State, Department of Planning and Economic Development, Hawaii Administrative Rules, Chapter 15: Land Use Commission Rules, September 3, 1986.

Hawaii State, Office of Environmental Quality Control. "A Guidebook for the Hawaii State Environmental Review Process," June, 2004.

Hawaii State, Office of State Planning, The Hawaii State Plan, Chapter 226, Hawaii Revised Statutes, 1991.

Helber Hastert & Fee, Planners, "Draft Environmental Impact Statement, Kailua Gateway Development," Prepared for Kaneohe Ranch, March 1992.

Honolulu, City and County of, "Article 6. Koolaupoko, Part I: Development Plan Special Provisions for Koolaupoko."

Honolulu, City and County of, "Chapter 24: Development Plans," Ordinance No. 92-14.

Honolulu, City and County of, Oahu General Plan, 1987 Edition.

Honolulu, City and County of, Department of Land Utilization, Land Use Ordinance, 1991.

Malo, David. 1991. Hawaiian Antiquities (Moolelo Hawaii), translated from Hawaiian by Nathaniel B. Emerson, 1989, *Bishop Museum Special Publication* No 2, 2nd edition. Honolulu, Hawaii.

Sterling, Elspeth P. and Catherine C. Summers (comp.). 1978. *Sites of O`ahu*, Department of Anthropology, B.P. Bishop Museum, Honolulu, HI.

United States Architectural and Transportation Barriers Compliance Board. "Americans with Disabilities Act Accessibility Guidelines" (ADAAG) section 1-10, published September 1994.

United States Architectural and Transportation Barriers Compliance Board. “Building a True Community - Final Report - Pubic Rights-of-Way Access Advisory Committee," published January 10, 2001.

United States Architectural and Transportation Barriers Compliance Board. 36 CFR Parts 1190 and 1191 Part II "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Architectural Barriers Act (ABA) Accessibility Guidelines; Final Rule," published July 23, 2004.

United States Department of Transportation, Federal Highway Administration, *Visual Impact Assessment for Highway Projects*, Publication No. FHWA-HI-88-054.

United States Government, Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

5.0 LIST OF ACRONYMS

APE	Area of Potential Effect
BWS	Board of Water Supply
BMP	Best Management Practice
CRA	Cultural Resource Assessment
DA	Department of Army
DAGS	Department of Accounting and General Services
DEA	Draft Environmental Assessment
DOE	Department of Education
DP	Development Plan
DPS	Department of Public Safety
DTS	Department of Transportation Services
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
HAR	Hawaii Administrative Rules
HRS	Hawaii Revised Statutes
HYCF	Hawaii Youth Correctional Facility
KHS	Kailua High School
OEQC	Office of Environmental Quality Control
PB	Parsons Brinckerhoff
SCS	Scientific Consulting Services
SHPD	State Historic Preservation Division
WCCC	Women's Community Correctional Center

APPENDIX D

Phase I – Environmental Site Assessment

for

A New Access Road to Kailua High School

Tax Map Key 4-2-03:004 (por) and :026 (por)

Kailua, O`ahu, Hawai`i

Prepared for:
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street
Honolulu, Hawai`i 96813

Prepared by:
Environmental Planning Solutions, LLC
945 Makaīwa Street
Honolulu, Hawai`i 96816

August 2005

PHASE I

ENVIRONMENTAL SITE ASSESSMENT

FOR

A NEW ACCESS ROAD TO KAILUA HIGH SCHOOL

TAX MAP KEY 4-2-03:004 (por) and :026 (por)

KAILUA, O`AHU, HAWAI`I

Prepared For:

Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street
Honolulu, Hawai`i 96813

Prepared by:
Environmental Planning Solutions, LLC
945 Makaīwa Street
Honolulu, Hawai`i 96816

August 2005

TABLE OF CONTENTS

PAGE

EXECUTIVE SUMMARY……..……1

1.0 INTRODUCTION……...5

2.0 PURPOSE AND SCOPE OF WORK…….…….……...5

3.0 SITE DESCRIPTION……..6

3.1 CURRENT SITE ……...6
3.1 SITE PHYSIOGRAPHY…….…...6
3.3 GEOLOGY AND HYDROGEOLOGY……8
3.4 SITE SOILS……..11

4.0 SITE RECONNAISSANCE……..11

5.0 PAST SITE CONDITIONS……...12
5.1 SITE HISTORY……....16
5.2 INTERVIEW DOCUMENTATION……16

6.0 ENVIRONMENTAL DATABASE AND DOCUMENTS REVIEW……..17

6.1 ENVIRONMENTAL DATABASE REVIEW…..…….…….....17
6.2 PROPERTY RECORDS…….18
6.2.1 Local Agency Inquiries…….19

7.0 FINDINGS AND RECOMMENDATIONS…….……..19

8.0 LIMITATIONS……..19

9.0 SIGNATURE…….20

References……...21

Figure 1 Site Vicinity Map
Figure 2 Kailua High School Proposed Access Road Conceptual Plan
Figure 3 Tax Map
Figure 4 Photo Documentation
Appendix A Environmental Data Resources (EDR) Report
Appendix B City and County Property Tax Assessor Records
Appendix C Agency Correspondence

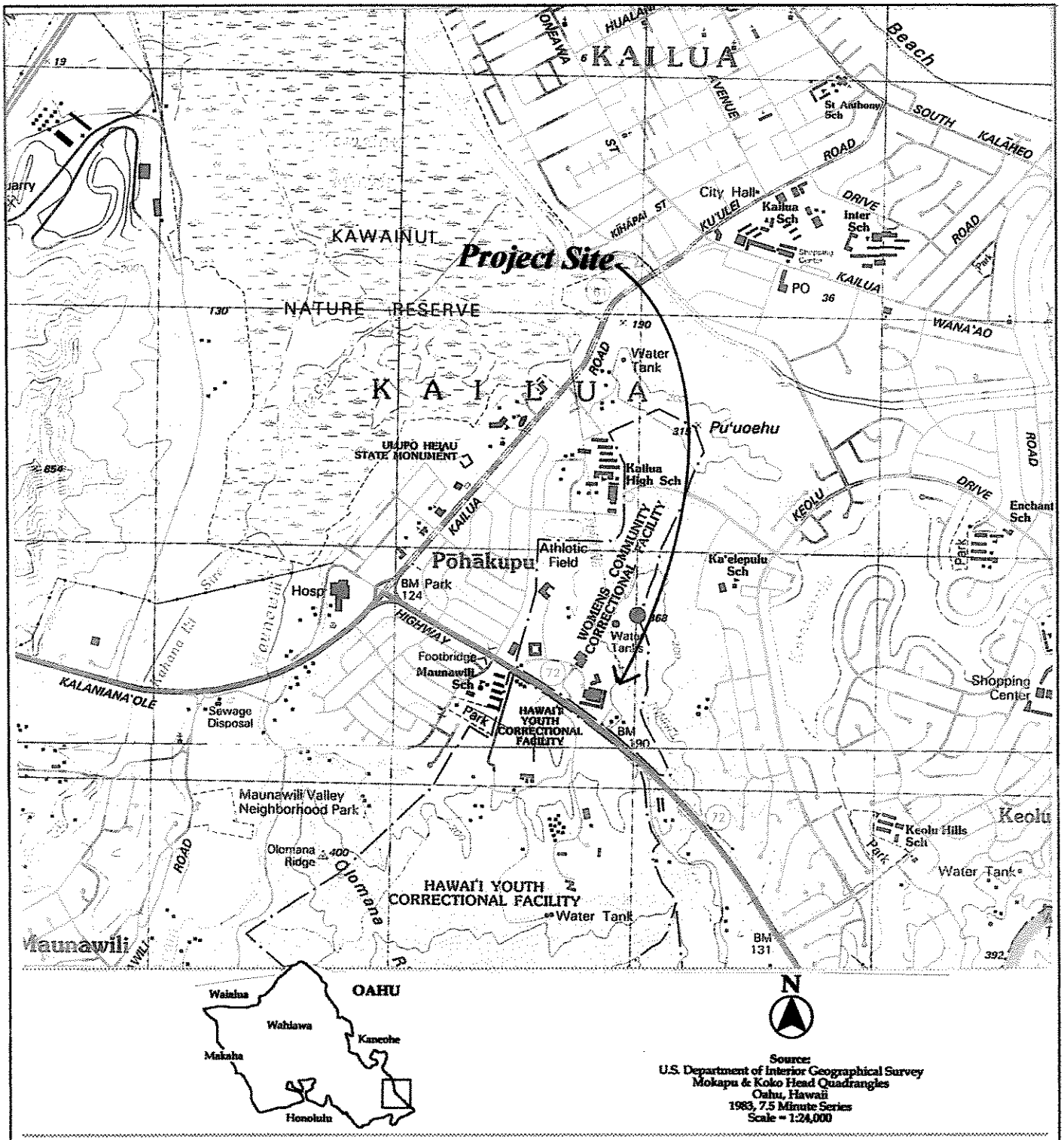
EXECUTIVE SUMMARY

Environmental Planning Solutions (EPS) has performed a Phase I Environmental Site Assessment of parcels Tax Map Key (TMK) 4-2-03:004 (por) and TMK 4-2-03:026 (por), located in Kailua, in Windward O`ahu for Parsons Brinckerhoff Quade and Douglas, Inc. This Phase I - ESA was performed in accordance with our Proposal dated December 20, 2004. We understand that the ESA is being undertaken because Parsons Brinckerhoff, who has been commissioned by the State of Hawai`i, requires special and technical studies to assist in the preparation of environmental documents and engineering plans for a proposed new access road that would traverse the subject parcels to the Kailua High School campus. See Figures 1 and 2, Site Vicinity Map and Conceptual Plan respectively.

Combined both parcels cover 106.5 acres, according to the most recently available property information records obtained from the City and County of Honolulu's Property Information Database (July 2005) and Property Tax records. The State of Hawai`i Department of Accounting and General Services (DAGS) plans to develop a new right-of-way through undeveloped portions of these two parcels to create a new access road connecting Kalaniana`ole Highway and Kailua High School.

This assessment was conducted to determine whether conditions or situations at the site might result in present real or potential hazards, or environmental liabilities as dictated by federal, state, and local statutes and regulations. Specific areas investigated included: historical uses of the subject property; signs of gross surface contaminations; hazardous materials and wastes; and the presence of equipment containing polychlorinated biphenyls (PCBs), and underground storage tanks (USTs).

In the past, the land was used for kula (dryland) agricultural activities including cattle grazing. Presently it is undeveloped and vegetated with shrubs, bushes, trees and weeds. The subject corridor overlooks Kailua's Ka`elepulu Enchanted Lake community to the east and the State Women's Correctional Facility to the immediate west. The Pōhākupu residential subdivision lies to the northwest of the correctional facility with Kailua High School located in the northern section of this subdivision. The school's existing access is Ulumanu Drive, which is connected to Kailua Road through Pōhākupu subdivision. Zoning designation of Tax Map Key no. 4-2-003:026 is R-5 Single-Family Residential, and of Tax Map Key no. 4-2-003:004 are Ag-2 General Agriculture and R-5 Single-Family Residential, as defined by the City and County of Honolulu Land Use Ordinance (LUO).



Environmental Planning Solutions, LLC

Site Vicinity Map
Kailua High School Proposed Access Road

Figure 1
August 2005



Kailua High School Proposed Access Road

Historical records indicate that land use in the vicinity of the subject parcels was in agriculture until post World War II circa 1952, the date of the earliest available aerial photograph of the area. The conversion from agricultural use started in the 1950s, when the nearby lands ceased to be planted for sugar production and cattle grazing.

A review of the environmental regulatory databases indicated the following:

- No U.S. EPA or state Superfund sites are within a one mile radius of the Property;
- No CERCLIS site is located within a one mile radius of the Property;
- No RCRA treatment, storage, and disposal facility is located within a 0.5-mile radius of the Property;
- No RCRA generators are located on the Property or on adjacent properties;
- No underground storage tanks are located on the Property;
- No leaking underground storage tanks (LUSTs) are reported on or within a 0.5-mile radius of the property.
- No active landfills are located within a half-mile of the property; and
- No spills or incidents connected with the Property are entered on the ERNS database.

A site reconnaissance of the Property, performed July 20, 2005, revealed that the site which is at the base of Keaniani Ridge, is undeveloped and covered with scattered trees, shrubs and bushes. Midway between Kalaniana`ole Highway and Kailua High School, a Board of Water Supply water tank exists on the ridge east of the subject corridor. No conditions were observed that might be considered environmentally significant along the subject corridor.

Based on the available information reviewed, EPS concludes that the project site has potentially no significant environmental concerns and recommends no further environmental evaluation at this time

1.0 INTRODUCTION

EPS has been retained by Parsons Brinckerhoff to perform a Phase I – Environmental Site Assessment (ESA) for a proposed new two-lane access road to Kailua High School in Windward O`ahu. Throughout this ESA the subject parcels will be referred to as "the Property" or the "project site."

The Department of Accounting and General Services (DAGS) proposes to build an additional access road to Kailua High School, extending from Kalaniana`ole (72) Highway at Old Kalaniana`ole Road to the rear of the high school at Ulumanu Drive. The proposed additional access road is anticipated to alleviate traffic congestion in the Kailua neighborhood of Pōhākupu in connection with activities of Kailua High School.

Under the proposal, a new access road would be constructed at the base of Keaniani Ridge with direct access from Kalaniana`ole Highway to an existing access gate located a the rear of the high school. The access gate is located directly across the campus from the main entrance. The new access road would be a paved two-lane facility with no additional amenities other than security lighting.

Upon receipt of all permits and approvals, construction is expected preliminarily to commence in the year 2007. Cost of the project is approximately $5-6 million.

2.0 PURPOSE AND SCOPE OF WORK

The purpose of this ESA was to investigate past and present land uses of the Property and surrounding areas to determine if the potential for hazardous materials contamination exists. This ESA includes a site and vicinity walk-through, a database and documents search and review, an aerial photograph review, and a limited hydrogeological review.

This assessment was performed in accordance with American Society for Testing and materials (ASTM) Standard: E 1527-00, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". The ASTM Standard defines customary practice for conducting environmental site assessments of a parcel of commercial real estate with respect to contaminants within the scope of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and to petroleum products.

EPS performed the following tasks:

- Reviewed available documents from Environmental Data Resources, Inc. (EDR), City and County Property Tax Assessor files, reports of recently completed projects in the vicinity, as well as maps and aerial photographs to assess past land use at the Property;

- Conducted a database review and contacted local and State agencies to determine the regulatory history associated with the Property; agencies contacted in writing were the Honolulu Local Emergency Planning Committee, City and County of Honolulu Fire Department, and the State Department of Health Hazard Evaluation and Emergency Response (HEER)Office;

- Conducted site reconnaissance to assess present site conditions;

- Reviewed documentation of interviews with and correspondence of individuals having knowledge of potential environmental hazards in the area;

- Reviewed aerial photographs at the State Archives which are dated 1939 to 1970; and

- Prepared Phase I Environmental Site Assessment Report which documents EPS's findings.

This assessment is based on information that has been provided to EPS by applicable agencies and individuals. Conclusions and recommendations are drawn from the cumulative findings of the aforementioned sections.

3.0 SITE DESCRIPTION

This section contains a description of the environmental setting.

3.1 CURRENT SITE LAYOUT

The Property consists of two parcels, TMK nos. 4-2-003:004 and 4-2-003:026 (pors) (Figure 3) located in the Kailua community, Kawailoa ahupuaa, windward O`ahu, City and County of Honolulu. The project site is located approximately 2.25 miles from the southeast coast of the island of O`ahu. The topography slopes toward the ocean. It shares the same address as the State Women's Correctional Facility at 42-477 Kalaniana`ole Highway. The project site is located approximately 800 feet east (toward Waimanalo) from the entrance to the Women's

KAILUA KOOLAUPOKO. OAHU.

Kailua High School Proposed Access Road

Figure 3
Tax Map

facility. Topographic map coverage of the site vicinity is provided by the United States Department of Interior, Geological Survey (USGS) 7.5 minute topographic map, Mokapu and Koko Head, Hawai`i Qudrangles (1983). Property coordinates are 21° 22' 31.4" lat., and 157° 44' 53.2" long. The elevation of the project site is approximately 180 to 220 feet above mean sea level. The nearest body of water is Maunawili Stream located about 0.3- to 0.5-mile to the west of the site. Existing use of the project site is undeveloped land that forms the base of Keaniani ridge. The current land use around the area is residential and agriculture.

3.2 SITE PHYSIOGRAPHY and FLOOD ZONE

The Property is located in the community of Pōhākupu, Kailua on the island of O`ahu. The project site is located outside and north of the 500-year flood zone as defined by the Federal Emergency Management Agency (FEMA) (Panel 1500010090C) (EDR, 2005).

3.3 GEOLOGY AND HYDROGEOLOGY

3.3.1 Site Geology

A review of published geologic reports and maps was conducted to obtain available information regarding subsurface conditions in the general area of the Project Site. This section contains a summary of the literature reviewed.

The Hawai`ian Archipelago is a chain of seamounts and islands in the North Pacific extending 2,600 kilometers (km) west by northwest from the largest island of Hawai`i. Volcanics are the dominant rock type and consist of basaltic flows, caldera and dike complexes, and pyroclastics. Sediments include limestone reefs and dunes, beach and dune sands, and alluvium deposited near present day and ancient shorelines, typical of tropical to subtropical atoll cycles. Some ancient limestone reefs and dunes are found inland due to climatic and sea level fluctuations.

The island of O`ahu, the third largest of the Hawai`ian chain, is composed of two volcanoes, the Ko'olau Volcano and the Waianae Volcano. The older Waianae Volcano is a shield volcano built up by a series of eruptions, which produced the Waianae Volcanic series. It was formed from a caldera and rift zones found on the western portion of the island. Basaltic flows of the Waianae formation are subdivided into three structurally and chemically distinct members (Macdonald, 1940; and Macdonald, 1968). These flows range from 2.5 to 3.1 million years old and are overlain by the 1.8 to 2.7 million year old flows of the Ko'olau volcano (Doell and Dalrymple, 1973).

The Ko`olau Volcano, where the Project Site is located, is an unusually elongate shield volcano built principally by eruptions along a northwest-southeast-trending rift zone. The lavas produced during the shield-building phase of the volcano are known as the Koolau Volcanic Series and consist of tholeitic and olivine basalts with small amounts of oceanite. The eroded remains of the Koolau Volcanic Shield are approximately 37 miles long, trending northwest-southeast, and comprise the remainder of O`ahu. Lava flows from the Koolau rift zone flowed and bancked against the older Waianae volcanoes forming the central plain of O`ahu (Macdonald, et al., 1983). Rocks of the Ko'olau volcano consist mostly of hundreds of thin basalt flows one to three meters thick. The Ko'olau flows erupted from a main caldera in the vicinity of present day Kailua, along with two main rift zones extending northwest and southeast of the caldera. Following these main volcanic events, stream erosion dissected the island and created two belts of mountain ranges, which runs northwest and southeast.

A long period of volcanic quiescence followed the Koolau shield-building stage, during which erosion occurred and alluvium and marine sediments accumulated along coastal regions. Deep valleys were incised into the bedrock by major streams and subsequently filled with sediments. Following a long period of volcanic quiescence of approximately two million years, volcanic activity resumed. These eruptions constitute the Honolulu Volcanic Series. The Honolulu Series eruptions were scattered over a period of hundreds of thousands of years. Lavas of the Honolulu Volcanic Series includes nephelinites, melilite nephelinites, basanites, and alkalic olivine basalts.

The volcanic rocks underlying the Project Site are part of the main Koolau Volcano caldera complex that includes lava flows, vent breccia, and dike complexes of the Koolau volcanic series (Macdonald et al., 1983). The caldera rocks have been much affected by rising volcanic gases and hot water resulting in the formation of secondary minerals such as zeolites, epidote, and quartz. The general horizontal attitude of the caldera-filling lavas was disturbed in some places by sagging to produce basin-like structures such as that seen in Olomana Peak which is located just below its base.

The topography slopes toward the ocean and the elevation of the project site is between 180 and 220 feet above sea level. The volcanic rocks underlying the Project Site are part of the 2.2 to 2.6-million year old Koolau Series that are primarily composed of tholeiitic and alkalic basalts (Macdonald et al., 1983).

3.3.2 Hydrogeology

The primary drinking water in the Hawai`ian Islands is developed from basal groundwater. Basal groundwater is formed by rainwater percolating down through the residual soils and permeable volcanic rock. Fresh water, moving downward through the hundreds of lava flows encounters the saltwater in the rocks, and because it is less dense than saltwater, floats on and

displaces the underlying salt water. The fresh basal water floating on the saltwater presses downward on the saltwater forming a basal lens or a "Ghyben-Herzberg" lens. A zone of transition between the fresh groundwater and the ocean salt water occurs due to the constant movement of the interface as a result of tidal fluctuations, seasonal fluctuations in recharge and discharge, and discharge due to aquifer development (Macdonald, et al., 1983).

Because rainfall tends to be greater in the interior mountainous areas of the island, recharge to the basal groundwater bodies is also greatest in these areas. As a result, groundwater levels are high in these areas, which cause groundwater to flow, generally, from the interior of the island to the shoreline. Frictional resistence to groundwater flow causes it to build up within the island until it attains sufficient hydraulic head to overcome friction. For this reason, basal groundwater acquires a slope toward the shoreline.

However, not all of the water percolating downward throught the zone of aeration goes directly to the basal water table. There are areas where beds are less permeable than beds above and below. When descending water encounters such beds of low permeability, the water tends to run off instead of sinking (Macdonald, et al., 1983). Thus, a saturated zone is formed on top of the relatively impermeable bed known as perched groundwater. The bed could be a bed of dense lava but is commonly a layer of either alluvium or volcanic ash. Beneath the perched water the rocks or soil could be again, unsaturated.

According to Mink and Lau (1990), the project site lies within the Windward Sector and Koolaupoko System, which is identified with the Status Code 30604212 and Aquifer Code (11111). The code indicates that the project site overlies one aquifer. The aquifer is high level (fresh water not in contact with sea water) and unconfined in dike compartments. The Aquifer Code signifies that the aquifer is currently being used as a drinking water supply, is fresh (<250 milligrams per liter [mg/L] C1-), is irreplaceable, and is highly vulnerable to contamination (Mink and Lau, 1990). The regional groundwater flow is expected to be towards the Pacific Ocean (north). Groundwater is estimated to reside between 180 and 220 feet below ground surface (bgs).

There are three drinking water wells located three-quarters of a mile to the southwest of the project site, according to the State of Hawai`i Department of Land and Natural Resources (DLNR) Groundwater Index (DLNR, 1991). The project site is located on the ocean side (makai) of the underground injection control line (UIC), according to the Department of Health Injection Control Program maps (USGS, 1983).

Although the Project Site is located below the UIC line, the project site overlies a currently used drinking water source aquifer (Mink and Lau, 1990). Because "the division of the aquifer

system is based largely on geology", the groundwater system underlying the Site sould be considered as a site where the drinking water source is threatened (HDOH, 2000).

3.4 SITE SOILS

According to the United States Department of Agriculture, Soil Conservation Service's "Soil Survey of Islands of Kauai, O`ahu, Maui, Molokai, and Lanai, State of Hawai`i," The soil at the site is classified as Pōhākupu Series, Pōhākupu silty clay loam (PkB) that occurs on terraces and alluvial fans. The soil is well-drained and derived from basic igneous material. Soil is Class B-moderate infiltration rates, deep and moderately deep, moderately well drained and well drained soils with moderately coarse textures. Well drained soils have intermediate water holding capacity. Depth to water table is more than 6 feet. The soils were used for sugar cane, pineapple, vegetable crops, pasture, and home sites. The natural vegetation consists of guava, Christmas berry, Japanese tea, haole koa, and kikuyu grass (USDA 1972).

3.5 CLIMATE

The climate at the project site is warm with moderate rainfall, and is characterized by persistent northeasterly trade winds. Mean temperatures for the Kailua area range from a low of 65 to a high of 88 degrees Fahrenheit (Armstrong, 1983). Median annual rainfall is approximately 50 inches (127 cm) per year, which is concentrated in winter months (Armstrong, 1983) and pan evaporation averages approximatey 60 inches per year (State of Hawai`i, DLNR, 1985).

4.0 SITE RECONNAISSANCE

On July 20, 2005, Colette Sakoda of Environmental Planning Solutions performed a site visit and surrounding area reconnaissance. The EPS site assessor, Colette Sakoda, conducted a walk through of the site and immediate surrounding area. The site visit or walk-through was performed in order to assess the potential for hazardous materials and waste used, generated, or stored at the site, and their potential impact on present or future environmental concerns. The site walk-through is an initial visual survey that generally includes an evaluation of natural waterways, areas of stressed vegetation, signs of solid or hazardous waste dumping or disposal, evidence of past releases of hazardous substances, and evidence or abnormal odors associated with the site, etc. No sampling for suspect material is generally done during a Phase 1 site assessment.

The site is an elevated parcel of land covered with loose soils, scattered shrubs, haole koa bushes and trees, vacant of any buildings. The Enchanted Lake residential community to the east, State

Women's Correctional Facility and Pōhākupu residential subdivision to the west, Kailua High School to the north, and Kalaniana`ole Highway and the Youth Correctional Facility to the south border it. The project site is at the base of Keaniani ridge, and a Board of Water Supply water tank is located mid-way between the proposed alignment's southern border at Kalaniana`ole Highway and Kailua High School at the north end. Topography throughout the proposed alignment varies with elevational changes ranging between 200 and 220 feet above mean sea level, which made walking on this undeveloped site quite challenging.

The project site exists in between the older residential subdivision of Pōhākupu in which Kailua High School and the Women's Correctional Facility reside, and the growing Enchanted Lake and Keolu Hills subdivisions which are developed around Ka`elepulu Pond. Ka`elepulu, Enchanted Lake and Keolu Hills elementary schools, Kailua High School, churches and parks are located within ½- to 3/4 –mile of the site. Public facilities including police and fire services exist within a mile south and east of the Project Site. A Hawaiian Electric Company (HECO) Koolau T&D baseyard is located at 1387 Ulupi'i Street about 1/4-mile west of the project site in the Pōhākupu residential subdivision.

No mounted transformers were observed on the subject Project Site. EPS walked through most of the site and did not find evidence of past surface releases. No recognized environmental conditions were observed during the site investigation. At this time no further environmental investigation is recommended. See Figure 4 Photographs.

A drive-by reconnaissance of the surrounding area revealed no other environmental conditions that could potentially impact the Project Site. Surrounding properties are comprised of residential, institutional and park land uses and landscaping representative of an older residential suburban community.

5.0 PAST SITE CONDITIONS

EPS reviewed the City and County of Honolulu Land Information database, Property Tax Assessor maps, aerial photographs found in the State of Hawai`i Archives, and interview documentations of personnel knowledgeable of the Property's history.



Southwestern edge of Project Site with driveway into Women's Correctional Facility in center of photo. Natural drainage swale running along southern border of property.



View from Project Site onto Kalanianaole Highway. Youth Correctional Facility is just beyond the top of the photo.

Figure 4
Kailua High School Proposed Access Road Site Photos



Topography of the project site varies; soils and scattered vegetation are representative of the site's natural, undeveloped condition. Photo taken near southern end of project site.



View from southern sector of the project area toward western edge of the proposed access road corridor.

Figure 4
Kailua High School Proposed Access Road Site Photos



View from southern end of project site toward Kailua High School campus beyond the slope. No evidence was found of recent activity or occupation of the project site.



Another view of southern sector of the project site looking north toward Kailua High School. Existing natural vegetation and soils showed no signs of stress or contamination.

Figure 4
Kailua High School Proposed Access Road Site Photos

5.1 SITE HISTORY

The project area's past is documented to a limited extent in the historic account of the ahupua`a of Kailua and Kawainui Marsh. Over one thousand years before Columbus crossed the Atlantic to discover America for Europeans, some unknown Polynesians navigated 2,400 miles of Pacific Ocean from the Marquesas to discover Hawai`i for themselves. The first Polynesian landfall on Hawai`i took place sometime between 200 A.D. and 400 A.D. and one of the first settlements is believed to have been at the edges of Kawainui Marsh (Dorrance, "O`ahu's Hidden History," 1998). Early activities around what was originally a pond included fishing and subsistence agriculture. In the latter part of the 19th century Chinese planters marked an era of rice-growing on the terraces toward Maunawili. Sugarcane planting in Waimanalo and the region surrounding Ka`elepulu Pond, which the Project Site overlooks, began after the Waimanalo Sugar Company was organized in 1878 (ibid).

Dairy farming was started in Kailua in 1924 when Mr. and Mrs. Lawrence Campos moved their operation to Kailua. The Campos Dairy operated on land leased from Kāne`ohe Ranch that is now occupied by numerous businesses including the former Consumer Tire Warehouse, Daiei store, Safeway, apartment complexes, and Windward Passage condominiums. The Dairy operation grew to over a thousand head of cattle before closing down in the 1960s. Cattle grazing in and around the Project Site occurred until after the second world war when housing development took off in Kailua (Dorrance, 1998 and William Hobron, 2005).

All the while, the eastern portions of both parcels, which are designated as the Project Site, appear to have remained undeveloped.

5.2 INTERVIEW DOCUMENTATION

Discussion with the Women's Correctional Facility Building Superintendent, William Hobron who has worked at the facility for 20 years, and a records review of a recently conducted Cultural Resource Assessment (Parsons Brinckerhoff, 2005) for the project revealed relevant knowledge of recent and historical uses of the project site and vicinity. Interview summaries with long time area residents regarding the historic uses and cultural practices are included in the project Draft Environmental Assessment.

On July 13, 2005, the EPS assessor discussed the Property with William Hobron regarding its recent and earlier uses to help determine the possibility of environmental hazards on the site. Mr. Hobron said that originally the project site was forested, then the land made way for pasture and cattle grazing. The part of the property where the Women's Facility now exists originally

functioned as a convalescent home or reform school. About nine to ten years ago (circa 1995), the State of Hawai`i relocated the Women's Correctional Facility from south of Kalaniana`ole Highway to its current site, while the Boy's Correctional Facility was shifted to the site (south) vacated by the Women's facility.

In the year 2000, a steel-walled 500-gallon fuel oil underground storage tank (UST) was closed and removed from the Boy's Correctional facility south of Kalaniana`ole Highway, in accordance with U.S. EPA Title 40 CFR Part 280.72 regulations and State Department of Health standards. According to Mr. Hobron, no similar environmental conditions exist at the Women's facility. Additionally, the Project Site, which is the ridge on the eastern edge of the parcel, does not contain any past or potential conditions that would result in potential environmentally hazardous concerns because the land has remained undeveloped through the years since its use as pastureland.

6.0 ENVIRONMENTAL DATABASE AND DOCUMENTS REVIEW

6.1 ENVIRONMENTAL DATABASE REVIEW

A review was performed of the environmental regulatory databases (updated within 90 days of search, or at most recent update available) required by ASTM methodology at the respective search distances specified by the methodology.

Environmental Data Resources, Inc. (EDR), an independent environmental information service provider, was subcontracted to complete a thorough records search of the project site and surrounding areas. The Geocheck report, TC01464211.1r, prepared by EDR dated July 13, 2005 is provided in Appendix A of this report. The database search was conducted in accordance with search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. The subject Property was not found on any of the State and Federal hazardous material and hazardous waste listings or other databases researched.

The review of the regulatory databases provided the following:

- No U. S. EPA or state Superfund sites were within a 1.0 mile radius of the Property;
- No CERCLIS site was located within a 0.5 mile radius of the Property;

- No RCRA treatment, storage, and disposal facility was located within a 0.5-mile radius of the Property;
- No RCRA generators were located on the Property or adjacent properties;
- No underground storage tank facility was located on the Property;
- No leaking underground storage tanks was located within a half-mile radius of the Property;
- No active landfills were located within a 0.5 mile radius of the Property; and,
- No spills or incidents connected with the Property were entered in the ERNS database.

6.2 PROPERTY RECORDS

EPS reviewed ownership records of the Property at the City and County Real Property Assessment Office, dating from 1949 to the present. Property Tax Assessor records are included in this report as Appendix B. According to City and County of Honolulu Real Property Tax records, Tax Map Key no. 4-2-003:004 was transferred from the Territory of Hawai`i to the Department of Institutions by Executive Order #1278 in 1949. The original compound was utilized as a convalescent home, according to William Hobron, building superintendent of the State Women's Correctional Facility. In 1957, Executive Order 1783 set aside 31.67 acres of the parcel as well as Tax Map Key no. 4-2-003:026 for the Kailua High School site. Then in 1968, the State Department of Social Services, through Executive Order Nos. 1278, 1347 and 1964, commenced operating the existing compound as the Hawai`i Youth Correctional Facility.

In 1968, Tax Map Key no. 4-2-003:026, through Executive Order 2832, was withdrawn from operation of Executive Order 1347 (Youth Correctional Facility) to be used as a second entrance roadway to Kailua High School. Then, in or around 1995, the State of Hawai`i moved the Women's Correctional Facility from south of Kalaniana`ole Highway to the Youth Correctional Facility site and the Youth Facility was moved to the former Women's Facility site.

6.2.1 INQUIRIES WITH AGENCIES

Written inquiries were sent to the Honolulu Local Emergency Planning Committee (LEPC), Fire Department of the City and County of Honolulu, and the State Department of Health Hazard Evaluation and Emergency Response (HEER) Office regarding documentation of hazardous materials incidents or use or storage of such materials on or within a one-quarter mile radius of the project site. Written responses from the LEPC and Fire Department are included in Appendix C. None of the documented incidents have had any known adverse impact on the project site because these have been resolved in accordance with proper agency response and are located at sufficient distances, with adequate buffer zones and downgradient from the Property.

A records review of the HEER office files disclosed that an Underground Storage Tank (UST) was removed from the vocational Ho`okipa Cottage on the grounds of the State Boys' Facility south of the project site on the mauka side of Kalaniana`ole Highway in year 2000. The UST removal and closure activities were conducted in accordance with U.S. Environmental Protection Agency (U.S. EPA) Title 40 of the Code of Federal Regulations (CFR) Part 280.72, and State of Hawai`i Department of Health's (HDOH's) guidance (HDOH, 2000). A Phase II and Phase IIIA Closure Report are on file at the HEER office.

7.0 FINDINGS AND RECOMMENDATIONS

EPS has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Standard E 1527-00 for the project site whose address is identified as 42-477 Kalaniana`ole Highway. This assessment has revealed no evidence of recognized environmental conditions in connection with the Property. The assessment included a site reconnaissance to observe existing conditions, and a review of available local, state, and federal records. It should be noted in Figure 3 (page 7) that an older irrigation pipeline shown to traverse the Property could contain residue from historic pumping operations that used water from Kawainui Marsh. No subsurface or chemical analyses of soil or groundwater were conducted as part of this evaluation.

Based on the available information reviewed, EPS concludes that the Property has potentially no significant environmental concerns and recommends no further environmental evaluation at this time.

8.0 LIMITATIONS

The conclusions presented in this report are professional opinions based solely upon visual observations of the sites and their respective vicinities, and my interpretation of the available

historical information and documents reviewed. They are intended exclusively for the purpose outlined herein and at the site location and project indicated. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of said user.

EPS's services are performed, within the limits prescribed by its Clients, with the usual thoroughness and competence of the consulting profession, in accordance with the standard for professional services at the time those services are rendered. No warranty or representation, either expressed or implied, is included or intended in its proposals, contracts, or reports.

Opinions and recommendations presented herein apply to site conditions existing at the time of my investigation and those reasonably foreseeable; they cannot necessarily apply to site changes of which this office is not aware and has not had the opportunity to evaluate.

9.0 SIGNATURE

Colette Sakoda of Environmental Planning Solutions, LLC, performed the Phase I Environmental Site Assessment.



Colette Sakoda Date

REFERENCES

Alley, W.M., Reilly, T.E. and Franke, O.L., ***Sustainabiilty of Ground-Water Resources, U.S. Geological Survey Circular 1186***, 2001.

Brewer Environmental Services, ***Hawaii Youth Correctional Facility Phase II and IIIA Vocational Ho`okipa Cottage UST Closure Report [(PHL)(6116.02)]***, September 2000 and December 2000.

City and County of Honolulu Planning and Permitting Department, ***Property Information Utility, http://204.182.239.30) (August 2005), HOLIS***.

City and County of Honolulu ***Property Tax Assessor File Records***, July 2005.

Department of Geography, University of Hawai`i, ***Atlas of Hawai`i, third edition***, University of Hawai`i Press, 1998.

Environmental Data Resources, Inc. (EDR), ***ASTM GeoCheck Report for*** 42-477 Kalaniana`ole Highway ***)(TMK nos.*** 4-2-03:004 (por) and TMK 4-2-03:026 (por)***), July, 2005.***

Hawai`i TMK Service, ***TMK O`ahu Street and Condo Map Book, 12th edition***, 1998.

Mink and Lau, ***Aquifer Identification and Classification for O`ahu***, 1987.

Parsons Brinckerhoff Quade & Douglas, ***Cultural Resources Assessment***, 2005.

State of Hawai`i, Department of Land and Natural Resources, ***Ground Water Index and Summary***, August 1993.

State of Hawai`i, Department of Land and Natural Resources, Water Quality Plan, Commission on Water Resource Management, Draft, February 1992.

APPENDIX A:

Environmental Data Resources (EDR) Report

APPENDIX B:

City and County Property Tax Assessor Records

APPENDIX C:

Agency Correspondence

The EDR Radius Map
with GeoCheck®

Womens Community Correctional Center
42-477 Kalanianaole Highway
Kailua, HI 96734

Inquiry Number: 01464211.1r

July 13, 2005

EDR™ Environmental Data Resources Inc

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06460

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-MER

TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	6
Orphan Summary	12
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-7
Physical Setting Source Map Findings	A-8
Physical Setting Source Records Searched	A-12

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2005 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

42-477 KALANIANAOLE HIGHWAY
KAILUA, HI 96734

COORDINATES

Latitude (North):	21.375400 - 21° 22' 31.4''
Longitude (West):	157.748100 - 157° 44' 53.2''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	629790.1
UTM Y (Meters):	2364072.8
Elevation:	161 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	21157-D6 MOKAPU, HI
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following government records. For more information on this property see page 6 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
WOMEN'S COMMUNITY CORRECTIONAL CENTER 42-477 KALANIANAOLE HWY KAILUA, HI 96734	LUST	N/A
WOMEN'S COMMUNITY CORRECTIONAL CENTER 42-477 KALANIANAOLE HWY KAILUA, HI 96734	SHWS UST	N/A
WOMEN S COMMUNITY CORRECTIONAL CENTER 42-477 KALANIANAOLE HWY KAILUA, HI 96734	FINDS	110013775165
HAWAII YOUTH CORRECTIONAL FACILITY 42-477 KALANIANOLE KAILUA, HI 96734	FTTS INSP	N/A

EXECUTIVE SUMMARY

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL ---- National Priority List
Proposed NPL ---- Proposed National Priority List Sites
CERCLIS ---- Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP ---- CERCLIS No Further Remedial Action Planned
CORRACTS ---- Corrective Action Report
RCRA-TSDF ---- Resource Conservation and Recovery Act Information
RCRA-LQG ---- Resource Conservation and Recovery Act Information
RCRA-SQG ---- Resource Conservation and Recovery Act Information
ERNS ---- Emergency Response Notification System

STATE ASTM STANDARD

SWF/LF ---- Permitted Landfills in the State of Hawaii
VCP ---- Voluntary Response Program Sites

FEDERAL ASTM SUPPLEMENTAL

CONSENT ---- Superfund (CERCLA) Consent Decrees
ROD ---- Records Of Decision
Delisted NPL ---- National Priority List Deletions
HMIRS ---- Hazardous Materials Information Reporting System
MLTS ---- Material Licensing Tracking System
MINES ---- Mines Master Index File
NPL Liens ---- Federal Superfund Liens
PADS ---- PCB Activity Database System
US ENG CONTROLS ---- Engineering Controls Sites List
ODI ---- Open Dump Inventory
UMTRA ---- Uranium Mill Tailings Sites
FUDS ---- Formerly Used Defense Sites
INDIAN RESERV ---- Indian Reservations
DOD ---- Department of Defense Sites
RAATS ---- RCRA Administrative Action Tracking System
TRIS ---- Toxic Chemical Release Inventory System
TSCA ---- Toxic Substances Control Act
SSTS ---- Section 7 Tracking Systems

STATE OR LOCAL ASTM SUPPLEMENTAL

SPILLS ---- Release Notifications

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas ---- Former Manufactured Gas (Coal Gas) Sites

EXECUTIVE SUMMARY

BROWNFIELDS DATABASES

US BROWNFIELDS ..... A Listing of Brownfields Sites
US INST CONTROL ..... Sites with Institutional Controls
BROWNFIELDS ..... Brownfields Sites
INST CONTROL ..... Sites with Institutional Controls
VCP ..... Voluntary Response Program Sites

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STATE ASTM STANDARD

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 02/15/2005 has revealed that there are 19 SHWS sites within approximately 1 mile of the target property.

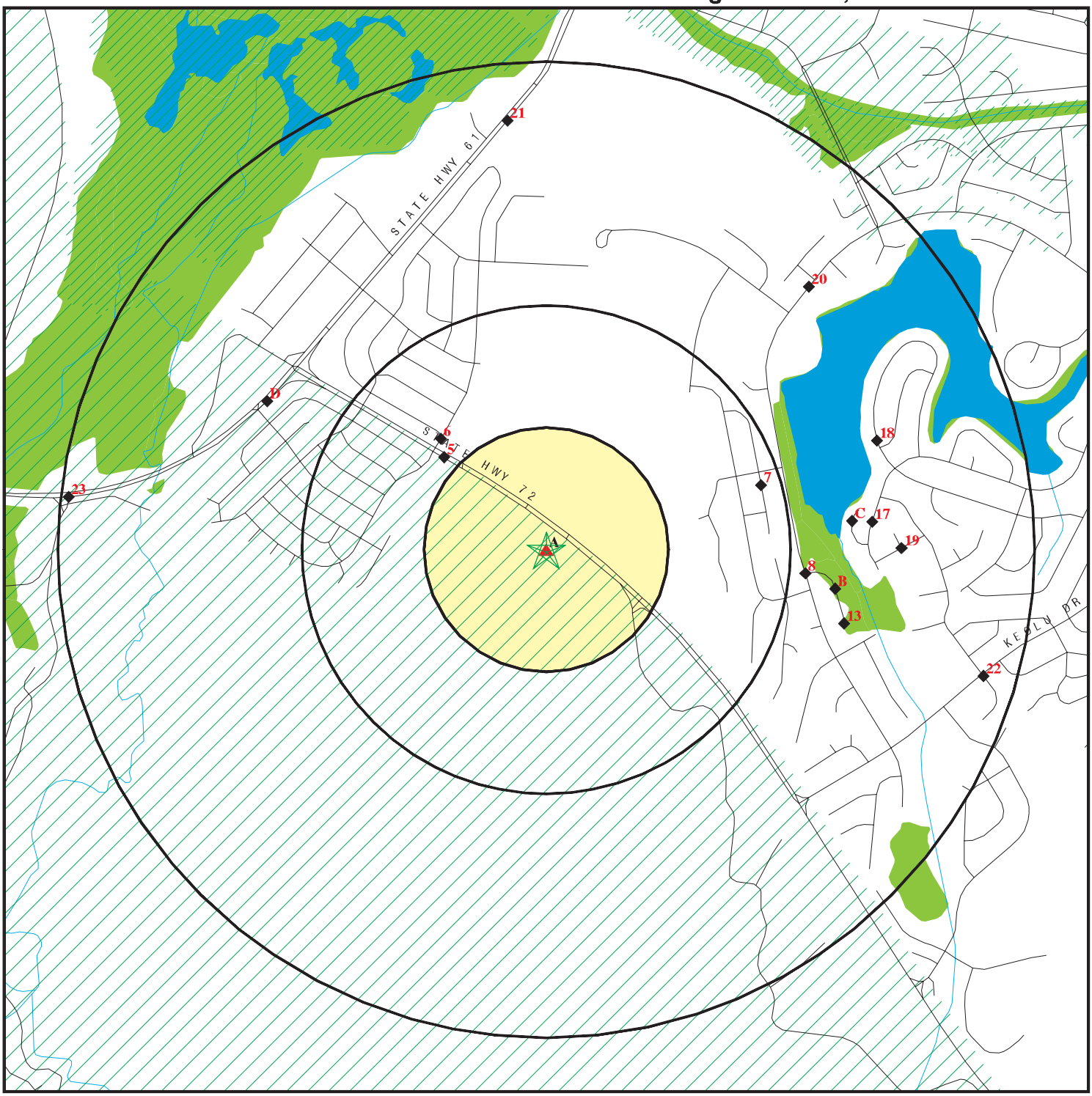
Lower Elevation	Address	Dist / Dir	Map ID	Page
OLOMANA FIRE STATION	***42-510 KALANIANAOLE HWY***	***1/4 - 1/2 NW***	***5***	***7***
HECO FACILITY: KOOLAU T&D BASE	1387 ULUPII ST	1/4 - 1/2 NW	6	7
AKELE STREET & KEOLE DRIVE, EN	1310 AKELE ST	1/4 - 1/2 ENE	7	8
LECI PROPERTIES, ENCHANTED LAK	KEOLU DR / KIUKEE ST	1/2 - 1 E	8	8
1451 KIUKEE PLACE, ABANDONED D	1451 KIUKEE PL	1/2 - 1 E	B9	8
1451 KIUKEE PLACE, ABANDONED D	1451 KIUKEE PL	1/2 - 1 E	B10	8
HECO TRANSFORMER 1455 KIUKEE P	***1455 KIUKEE PL***	***1/2 - 1 E***	***B11***	***8***
KAELEPULU STREAM BEHIND AKUIL	1156 AKUILA PL	1/2 - 1 E	C12	9
1499 KIUKEE PLACE, ENCHANTED L	1499 KIUKEE PL	1/2 - 1 ESE	13	9
1171 AKUILA PLACE	1171 AKUILA PL	1/2 - 1 E	C14	9
AMERON HAWAII (HC&D) - KAPAA Q	909 KALANIANAOLE HWY	1/2 - 1 WNW	D15	9
AT&T WIRELESS-KAILUA PALI	917 KALANIANAOLE HWY	1/2 - 1 WNW	D16	9
1170 AKUMU STREET, PESTICIDE/P	1170 AKUMU ST	1/2 - 1 E	17	10
EE BLACK CONSTRUCTION CO. - K	1169 KAHILI ST	1/2 - 1 ENE	18	10
1433 AKUPA STREET	1433 AKUPA ST	1/2 - 1 E	19	10
HECO TRANSFORMER 3466	***575 KEOLU DR***	***1/2 - 1 NE***	***20***	***10***
KAILUA ROAD WWPS	832 KAILUA RD	1/2 - 1 N	21	10
1405 AKAMAI STREET, COOKING GA	1405 AKAMAI ST	1/2 - 1 ESE	22	11
KALANIANAOLE HIGHWAY & MAUNAWI	KALANIANAOLE HWY / MA	1/2 - 1 W	23	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
DIESEL FUEL DUMPED IN STORM DRAIN	SHWS
LANIKAI ELEMENTARY SCHOOL	SHWS, FINDS
AOLOA STREET, KAILUA	SHWS
MAUNAWILI ABANDONED DRUM	SHWS
45-075 AULOA ROAD	SHWS
KAWAINUI STREAM, MAUKA OF	SHWS
AUWINA STREAM	SHWS
HELE STEET	SHWS
L&L DRIVE-IN	SHWS
MOKAPU CENTRAL OFFICE	SHWS
KAILUA CANAL ON KAAWAKEA ROAD	SHWS
KAILUA BEACH PARK KAIHOLU PLACE (O	SHWS
BHP GAS EXPRESS (STATION # 17)	SHWS
KAIMALU LOOP, SEWAGE SPILL	SHWS
602 KAIMENI STREET	SHWS
KAILUA BAY, BY KAIONE PLACE	SHWS
KAILUA BEACH, 280 KALAHEO AVENUE	SHWS
KALAMA BEACH, UNKNOWN COMPRESSED G	SHWS
KAILUA CORPORATION YARD	SHWS, FINDS
44-637 KANEOHE BAY DRIVE, SEWER	SHWS
KAPAA QUARRY ROAD DUMPING	SHWS
GRACE PACIFIC CORPORATION-UPPER KA	SHWS
KAWAINUI MARSH	SHWS, FINDS
KEOLU DRIVE ACROSS 456, RESIDENTIA	SHWS
HELE STREET AT KEOLU DRIVE, SEWAGE	SHWS
KUPAU SEWAGE SPILL	SHWS
LIKU STREET	SHWS
HAZARDOUS MATERIAL ON RESIDENTIAL	SHWS, SPILLS
KAILUA BEACH CYLINDER	SHWS
OLD KALANIANAOLE HIGHWAY	SHWS
KAPAA LANDFILL - KAPAA QUARRY ROAD	SHWS
PALAPU STREET	SHWS
PAOPUA LOOP	SHWS, SPILLS
ULUPUNI STREET, DUMPING	SHWS
KAPAA LDFL	CERCLIS, FINDS
KANEOHE BAY OIL DIESEL SIGHTED ALO	SWF/LF, SPILLS
KAPAA LANDFILL	SWF/LF
KAILUA CORPORATION YARD	LUST
KAPAA QUARRY MAINTENANCE YARD	UST
KAILUA CORPORATION YARD	SPILLS, UST
AMERON H C & D LTD	UST
HAWAII YOUTH CORRECTIONAL FACILITY	RCRA-SQG, FINDS

OVERVIEW MAP - 01464211.1r - Env. Planning Solutions, LLC

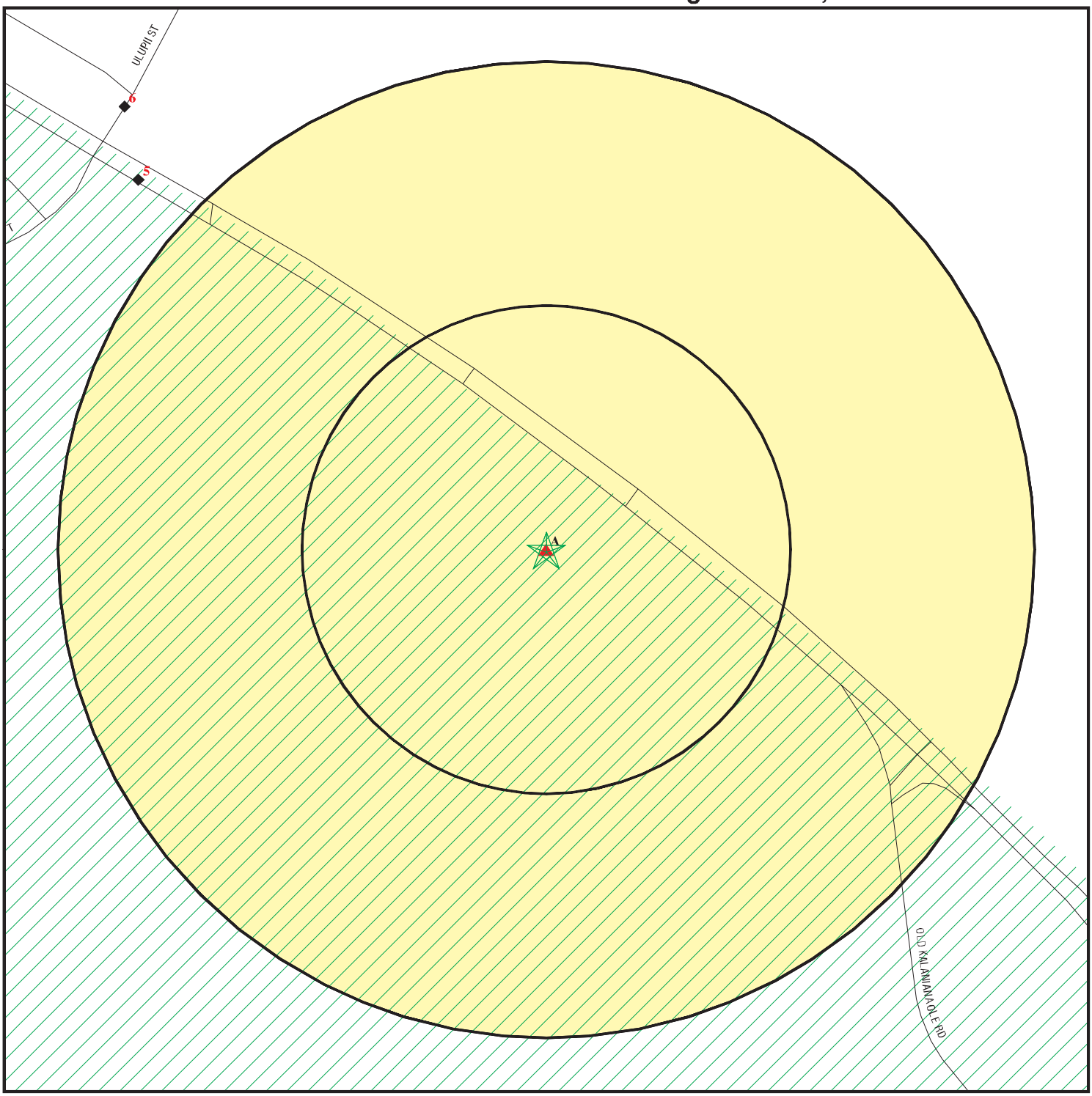


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

TARGET PROPERTY:	Womens Community Correctional Center	CUSTOMER:	Env. Planning Solutions, LLC
ADDRESS:	42-477 Kalanianaole Highway	CONTACT:	Colette Sakoda
CITY/STATE/ZIP:	Kailua HI 96734	INQUIRY #:	01464211.1r
LAT/LONG:	21.3754 / 157.7481	DATE:	July 13, 2005 8:54 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

DETAIL MAP - 01464211.1r - Env. Planning Solutions, LLC



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

0 1/16 1/8 1/4 Miles

N

TARGET PROPERTY:	Womens Community Correctional Center	CUSTOMER:	Env. Planning Solutions, LLC
ADDRESS:	42-477 Kalanianaole Highway	CONTACT:	Colette Sakoda
CITY/STATE/ZIP:	Kailua HI 96734	INQUIRY #:	01464211.1r
LAT/LONG:	21.3754 / 157.7481	DATE:	July 13, 2005 8:55 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRA TSD		0.500	0	0	0	NR	NR	0
RCRA Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRA Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
SHWS	X	1.000	0	0	3	16	NR	19
State Landfill		0.500	0	0	0	NR	NR	0
LUST	X	0.500	0	0	0	NR	NR	0
UST	X	0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS	X	TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
DOD		1.000	0	0	0	0	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS	X	TP	NR	NR	NR	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
SPILLS		TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY HISTORICAL DATABASES								
Coal Gas		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
BROWNFIELDS DATABASES								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
BROWNFIELDS		0.500	0	0	0	NR	NR	0
INST CONTROL		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

AQUIFLOW - see EDR Physical Setting Source Addendum

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

A1 Target Property **WOMEN'S COMMUNITY CORRECTIONAL CENTER**
42-477 KALANIANAOLE HWY
KAILUA, HI 96734

LUST **S103455030**
N/A

Site 1 of 4 in cluster A

Actual: 161 ft.

LUST:

Facility ID:	9-102215
Release ID:	010008
Facility Status Date:	37295
Facility Status:	Site Cleanup Completed
Project Officer:	Sutterfield

Facility ID:	9-102215
Release ID:	980225
Facility Status Date:	37389
Facility Status:	Site Cleanup Completed
Project Officer:	Ruiz

Facility ID:	9-102215
Release ID:	010006
Facility Status Date:	37327
Facility Status:	Case Transferred to HEER
Project Officer:	HEER

A2 Target Property **WOMEN'S COMMUNITY CORRECTIONAL CENTER**
42-477 KALANIANAOLE HWY
KAILUA, HI 96734

SHWS **1000601386**
UST **N/A**

Site 2 of 4 in cluster A

Actual: 161 ft.

SHWS:

Island :	Oahu
Supplement :	Not reported

UST:

Facility ID:	9-102215	Tank ID:	R-1
Tank Status:	Permanently Out of Use		
Tank Capacity:	1000	Installed:	10/10/1956
Date Closed:	07/22/1998	Substance:	Gasoline
Owner:	STATE PSD - WOMEN'S COMMUNITY CORRECTIONAL CENTER 42-477 KALANIANAOLE HWY Kailua, HI 96734		

Facility ID:	9-102215	Tank ID:	R-BARN-1
Tank Status:	Permanently Out of Use		
Tank Capacity:	1000	Installed:	Not reported
Date Closed:	11/03/2000	Substance:	Diesel
Owner:	STATE PSD - WOMEN'S COMMUNITY CORRECTIONAL CENTER 42-477 KALANIANAOLE HWY Kailua, HI 96734		

Facility ID:	9-102215	Tank ID:	R-HOOKIPA - 2
Tank Status:	Permanently Out of Use		
Tank Capacity:	500	Installed:	Not reported
Date Closed:	11/02/2000	Substance:	Not Listed
Owner:	STATE PSD - WOMEN'S COMMUNITY CORRECTIONAL CENTER		

WOMEN'S COMMUNITY CORRECTIONAL CENTER (Continued) **1000601386**

42-477 KALANIANAOLE HWY
Kailua, HI 96734

A3 **WOMEN S COMMUNITY CORRECTIONAL CENTER** **FINDS** **1006819670**
Target **42-477 KALANIANAOLE HWY** **110013775165**
Property **KAILUA, HI 96734**

Site 3 of 4 in cluster A

Actual:
161 ft.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
HAWAII ENGINE CONTROL SYSTEM
HAWAII-UNDERGROUND STORAGE TANK

A4 **HAWAII YOUTH CORRECTIONAL FACILITY** **FTTS INSP** **1008181633**
Target **42-477 KALANIANOLE** **N/A**
Property **KAILUA, HI 96734**

Site 4 of 4 in cluster A

Actual:
161 ft.

FTTS Insp:

Region:	09
Inspected Date:	06/22/1988
Insp Number:	1988062204947 2
Violation occurred:	No
Inspector:	CZAJKOWSKI
Investigation Type:	Section 6 PCB Federal Conducted
Facility Function:	User
Investig Reason:	Not reported
Legislation Code:	TSCA

---

5 **OLOMANA FIRE STATION** **SHWS** **1006818985**
NW **42-510 KALANIANAOLE HWY** **FINDS** **110013767450**
1/4-1/2 **KAILUA, HI 96734**
1490 ft.

Relative:
Lower

Actual:
148 ft.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
HAWAII ENGINE CONTROL SYSTEM
HAWAII-UNDERGROUND STORAGE TANK

SHWS:

Island :	Oahu
Supplement :	Not reported

---

6 **HECO FACILITY: KOOLAU T&D BASEYARD** **SHWS** **S106817428**
NW **1387 ULUPII ST** **N/A**
1/4-1/2 **KAILUA, HI 96734**
1655 ft.

Relative:
Lower

Actual:
145 ft.

SHWS:

Island :	Oahu
Supplement :	Not reported

Map ID / Direction / Distance / Distance (ft.) / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
7 **ENE** **1/4-1/2** **2423 ft.**	**AKELE STREET & KEOLE DRIVE, ENCHANTED LAKES** **1310 AKELE ST** **KAILUA, HI 96734**	**SHWS**	**S106816008** **N/A**
Relative: **Lower**	SHWS: Island : Oahu Supplement : Akele St & Keole Dr		
Actual: **8 ft.**			
8 **East** **1/2-1** **2812 ft.**	**LECI PROPERTIES, ENCHANTED LAKES** **KEOLU DR / KIUKEE ST** **KAILUA, HI 96734**	**SHWS**	**S106818751** **N/A**
Relative: **Lower**	SHWS: Island : Oahu Supplement : b/w Keolu Dr & Kiukee St		
Actual: **13 ft.**			
B9 **East** **1/2-1** **3150 ft.**	**1451 KIUKEE PLACE, ABANDONED DRUM** **1451 KIUKEE PL** **KAILUA, HI 96734** **Site 1 of 3 in cluster B**	**SHWS**	**S106815208** **N/A**
Relative: **Lower**	SHWS: Island : Oahu		
Actual: **6 ft.**	Supplement : Not reported		
B10 **East** **1/2-1** **3150 ft.**	**1451 KIUKEE PLACE, ABANDONED DRUM WITH HAZMAT LABE** **1451 KIUKEE PL** **KAILUA, HI 96734** **Site 2 of 3 in cluster B**	**SHWS**	**S106815209** **N/A**
Relative: **Lower**	SHWS: Island : Oahu		
Actual: **6 ft.**	Supplement : Not reported		
B11 **East** **1/2-1** **3164 ft.**	**HECO TRANSFORMER 1455 KIUKEE PLACE** **1455 KIUKEE PL** **KAILUA, HI 96734** **Site 3 of 3 in cluster B**	**SHWS** **FINDS**	**1006821127** **110013791771**
Relative: **Lower**	FINDS: Other Pertinent Environmental Activity Identified at Site: HAWAII ENGINE CONTROL SYSTEM		
Actual: **7 ft.**	SHWS: Island : Oahu Supplement : Not reported		

C12
East
1/2-1
3307 ft.

Relative:
Lower

Actual:
10 ft.

KAELEPULU STREAM BEHIND AKUILA PLACE
1156 AKUILA PL
KAILUA, HI 96734

Site 1 of 2 in cluster C

SHWS:
Island : Oahu
Supplement : 1156/1166 Akuila Pl, Enchanted Lakes

SHWS

S106818010
N/A

13
ESE
1/2-1
3317 ft.

Relative:
Lower

Actual:
13 ft.

1499 KIUKEE PLACE, ENCHANTED LAKES
1499 KIUKEE PL
KAILUA, HI 96734

SHWS:
Island : Oahu
Supplement : (Property next to)

SHWS

S106815216
N/A

C14
East
1/2-1
3318 ft.

Relative:
Lower

Actual:
10 ft.

1171 AKUILA PLACE
1171 AKUILA PL
KAILUA, HI 96734

Site 2 of 2 in cluster C

SHWS:
Island : Oahu
Supplement : Not reported

SHWS

S106815146
N/A

D15
WNW
1/2-1
3420 ft.

Relative:
Lower

Actual:
93 ft.

AMERON HAWAII (HC&D) - KAPAA QUARRY
909 KALANIANAOLE HWY
KAILUA, HI 96734

Site 1 of 2 in cluster D

SHWS:
Island : Oahu
Supplement : Not reported

SHWS

S106816225
N/A

D16
WNW
1/2-1
3435 ft.

Relative:
Lower

Actual:
91 ft.

AT&T WIRELESS-KAILUA PALI
917 KALANIANAOLE HWY
HONOLULU, HI 96734

Site 2 of 2 in cluster D

SHWS:
Island : Oahu
Supplement : Not reported

SHWS

S106816344
N/A

17
East
1/2-1
3535 ft.

1170 AKUMU STREET, PESTICIDE/PAINT ODOR
1170 AKUMU ST
KAILUA, HI 96734

SHWS **S106815145**
N/A

Relative:
Lower

Actual:
19 ft.

SHWS:
Island : Oahu
Supplement : Not reported

18
ENE
1/2-1
3763 ft.

EE BLACK CONSTRUCTION CO. - KAILUA/ENCHANTED LAKE
1169 KAHILI ST
KAILUA, HI 96734

SHWS **S106816962**
N/A

Relative:
Lower

Actual:
4 ft.

SHWS:
Island : Oahu
Supplement : Sewer Drains Akumu St & Akuili St

19
East
1/2-1
3839 ft.

1433 AKUPA STREET
1433 AKUPA ST
KAILUA, HI 96734

SHWS **S106815200**
N/A

Relative:
Lower

Actual:
26 ft.

SHWS:
Island : Oahu
Supplement : Not reported

20
NE
1/2-1
4017 ft.

HECO TRANSFORMER 3466
575 KEOLU DR
KAILUA, HI 96734

SHWS **1006821154**
FINDS **110013792066**

Relative:
Lower

Actual:
12 ft.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
HAWAII ENGINE CONTROL SYSTEM

SHWS:
Island : Oahu
Supplement : Not reported

21
North
1/2-1
4659 ft.

KAILUA ROAD WWPS
832 KAILUA RD
KAILUA, HI 96734

SHWS **S106818040**
N/A

Relative:
Lower

Actual:
68 ft.

SHWS:
Island : Oahu
Supplement : Not reported

Map ID / Direction / Distance / Distance (ft.) / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
22 **ESE** **1/2-1** **4918 ft.**	**1405 AKAMAI STREET, COOKING GAS ODOR** **1405 AKAMAI ST** **KAILUA, HI 96734**	**SHWS**	**S106815192** **N/A**
Relative: **Lower** **Actual:** **58 ft.**	SHWS: Island : Oahu Supplement : Not reported		
23 **West** **1/2-1** **5194 ft.**	**KALANIANAOLE HIGHWAY & MAUNAWILI ROAD** **KALANIANAOLE HWY / MAUNAWILI RD** **KAILUA, HI**	**SHWS**	**S106818095** **N/A**
Relative: **Lower** **Actual:** **34 ft.**	SHWS: Island : Oahu Supplement : Not reported		

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HONOLULU COUNTY	S103763651	KANEOHE BAY OIL DIESEL SIGHTED ALO	KANEOHE BAY		SWF/LF, SPILLS
KAILUA	U003221964	KAPAA QUARRY MAINTENANCE YARD	(KAPAA QUARRY RD) 115 KALANIAN	96734	UST
KAILUA	S106816867	DIESEL FUEL DUMPED IN STORM DRAIN	AKUMU ST	96734	SHWS
KAILUA	1006819451	LANIKAI ELEMENTARY SCHOOL	140 ALALA ST	96734	SHWS, FINDS
KAILUA	S106816249	AOLOA STREET, KAILUA	AOLOA ST	96734	SHWS
KAILUA	S106819043	MAUNAWILI ABANDONED DRUM	AULOA RD	96734	SHWS
KAILUA	S106815561	45-075 AULOA ROAD	45-075 AULOA RD	96734	SHWS
KAILUA	S106818304	KAWAINUI STREAM, MAUKA OF	HAMAKUA DR	96734	SHWS
KAILUA	S106816376	AUWINA STREAM	HAMAKUA DR	96734	SHWS
KAILUA	S106817584	HELE STEET	HELE ST	96734	SHWS
KAILUA	S106818655	L&L DRIVE-IN	HOOLAI ST	96734	SHWS
KAILUA	S106819161	MOKAPU CENTRAL OFFICE	253 ILIANA	96734	SHWS
KAILUA	S106818029	KAILUA CANAL ON KAAWAKEA ROAD	KAAWAKEA RD		SHWS
KAILUA	S106817681	KAILUA BEACH PARK KAIHOLU PLACE (O	KAIHOLU PL		SHWS
KAILUA	S106816513	BHP GAS EXPRESS (STATION # 17)	1143 KAILUA RD	96734	SHWS
KAILUA	S106818053	KAIMALU LOOP, SEWAGE SPILL	KAIMALU LOOP	96734	SHWS
KAILUA	S106815666	602 KAIMENI STREET	602 KAIMENI ST	96734	SHWS
KAILUA	S106817667	KAILUA BAY, BY KAIONE PLACE	KAIONE PL		SHWS
KAILUA	S106817686	KAILUA BEACH, 280 KALAHEO AVENUE	280 KALAHEO AVE	96734	SHWS
KAILUA	S106818088	KALAMA BEACH, UNKNOWN COMPRESSED G	KALAMA BEACH		SHWS
KAILUA	1004689024	HAWAII YOUTH CORRECTIONAL FACILITY	42 KALANIANAOLE HWY	96734	RCRA-SQG, FINDS
KAILUA	U003541813	KAILUA CORPORATION YARD	42-377 KALANIANAOLE HWY	96734	SPILLS, UST
KAILUA	U001236067	KAILUA CORPORATION YARD	42-377 KALANIANAOLE HWY	96734	LUST
KAILUA	1006820819	KAILUA CORPORATION YARD	42-377 KALANIANAOLE HWY	96734	SHWS, FINDS
KAILUA	S106815555	44-637 KANEOHE BAY DRIVE, SEWER	44-637 KANEOHE BAY DR	96734	SHWS
KAILUA	U003222015	AMERON H C & D LTD	KAPAA QUARRY 909 KALANIANAOLE	96734	UST
KAILUA	S106818204	KAPAA QUARRY ROAD DUMPING	KAPAA QUARRY RD	96734	SHWS
KAILUA	S106817200	GRACE PACIFIC CORPORATION-UPPER KA	KAPAA QUARRY RD	96734	SHWS
KAILUA	1006819296	KAWAINUI MARSH	KAPAA QUARRY RD	96734	SHWS, FINDS
KAILUA	S106818394	KEOLU DRIVE ACROSS 456, RESIDENTIA	KEOLU DR	96734	SHWS
KAILUA	S106817585	HELE STREET AT KEOLU DRIVE, SEWAGE	KEOLU DR	96734	SHWS
KAILUA	S106818647	KUPAU SEWAGE SPILL	KUPAU ST AT KEOLU DR	96734	SHWS
KAILUA	S106818779	LIKU STREET	LIKU ST		SHWS
KAILUA	S105263712	HAZARDOUS MATERIAL ON RESIDENTIAL	LUNAHOOKO LOOP	96734	SHWS, SPILLS
KAILUA	S106817676	KAILUA BEACH CYLINDER	310 MOKULOA ST	96734	SHWS
KAILUA	1000143738	KAPAA LDFL	OFF OLD QUARRY RD	96734	CERCLIS, FINDS
KAILUA	S106819468	OLD KALANIANAOLE HIGHWAY	OLD KALANIANAOLE HWY	96734	SHWS
KAILUA	S106818199	KAPAA LANDFILL - KAPAA QUARRY ROAD	OLD KAPAA QUARRY RD	96734	SHWS
KAILUA	S106819565	PALAPU STREET	PALAPU ST	96734	SHWS
KAILUA	S105262960	PAOPUA LOOP	PAOPUA LOOP	96734	SHWS, SPILLS
KAILUA	S106820702	ULUPUNI STREET, DUMPING	ULUPUNI ST	96734	SHWS
KAPAA, OAHU	S106100527	KAPAA LANDFILL	KAPAA QUARRY ROAD	96734	SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/28/05
Date Made Active at EDR: 05/16/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/04/05
Elapsed ASTM days: 12
Date of Last EDR Contact: 05/04/05

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 6
Telephone: 214-655-6659

EPA Region 8
Telephone: 303-312-6774

Proposed NPL: Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 04/27/05
Date Made Active at EDR: 05/16/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/04/05
Elapsed ASTM days: 12
Date of Last EDR Contact: 05/04/05

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/15/05
Date Made Active at EDR: 04/06/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/22/05
Elapsed ASTM days: 15
Date of Last EDR Contact: 03/22/05

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 03/22/05
Date Made Active at EDR: 04/06/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 04/01/05
Elapsed ASTM days: 5
Date of Last EDR Contact: 04/01/05

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/29/05
Date Made Active at EDR: 05/16/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 04/11/05
Elapsed ASTM days: 35
Date of Last EDR Contact: 03/07/05

RCRA: Resource Conservation and Recovery Act Information
Source: EPA
Telephone: 800-424-9346
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS). The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 05/20/05
Date Made Active at EDR: 06/09/05
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 05/24/05
Elapsed ASTM days: 16
Date of Last EDR Contact: 05/24/05

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/04
Date Made Active at EDR: 03/24/05
Database Release Frequency: Annually
Date of Data Arrival at EDR: 01/27/05
Elapsed ASTM days: 56
Date of Last EDR Contact: 04/25/05

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01
Database Release Frequency: Biennially
Date of Last EDR Contact: 04/15/05
Date of Next Scheduled EDR Contact: 06/13/05

CONSENT: Superfund (CERCLA) Consent Decrees
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/14/04 Date of Last EDR Contact: 04/26/05
Database Release Frequency: Varies Date of Next Scheduled EDR Contact: 07/25/05

ROD: Records Of Decision
Source: EPA
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/07/05 Date of Last EDR Contact: 04/04/05
Database Release Frequency: Annually Date of Next Scheduled EDR Contact: 07/04/05

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/28/05 Date of Last EDR Contact: 05/04/05
Database Release Frequency: Quarterly Date of Next Scheduled EDR Contact: 08/01/05

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/11/05 Date of Last EDR Contact: 04/04/05
Database Release Frequency: Quarterly Date of Next Scheduled EDR Contact: 07/04/05

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/04 Date of Last EDR Contact: 04/19/05
Database Release Frequency: Annually Date of Next Scheduled EDR Contact: 07/18/05

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/14/05 Date of Last EDR Contact: 04/04/05
Database Release Frequency: Quarterly Date of Next Scheduled EDR Contact: 07/04/05

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/11/05
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/30/05
Date of Next Scheduled EDR Contact: 06/27/05

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 202-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 02/22/05
Date of Next Scheduled EDR Contact: 05/23/05

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/30/05
Database Release Frequency: Annually
Date of Last EDR Contact: 05/10/05
Date of Next Scheduled EDR Contact: 08/08/05

DOD: Department of Defense Sites
Source: USGS
Telephone: 703-692-8801
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 02/08/05
Date of Next Scheduled EDR Contact: 05/09/05

UMTRA: Uranium Mill Tailings Sites
Source: Department of Energy
Telephone: 505-845-0011
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized. In 1978, 24 inactive uranium mill tailings sites in Oregon, Idaho, Wyoming, Utah, Colorado, New Mexico, Texas, North Dakota, South Dakota, Pennsylvania, and on Navajo and Hopi tribal lands, were targeted for cleanup by the Department of Energy.

Date of Government Version: 12/29/04
Database Release Frequency: Varies
Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

ODI: Open Dump Inventory
Source: Environmental Protection Agency
Telephone: 800-424-9346
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/85
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 05/23/95
Date of Next Scheduled EDR Contact: N/A

FUDS: Formerly Used Defense Sites
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/03
Database Release Frequency: Varies
Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

INDIAN RESERV: Indian Reservations
Source: USGS
Telephone: 202-208-3710
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 02/08/05
Date of Next Scheduled EDR Contact: 05/09/05

US ENG CONTROLS: Engineering Controls Sites List
Source: Environmental Protection Agency
Telephone: 703-603-8867
A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/10/05
Database Release Frequency: Varies
Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 03/07/05
Date of Next Scheduled EDR Contact: 06/06/05

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-566-0250
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/02
Database Release Frequency: Annually
Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Database Release Frequency: Every 4 Years
Date of Last EDR Contact: 04/05/05
Date of Next Scheduled EDR Contact: 06/06/05

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-566-1667

Date of Government Version: 04/13/05
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/21/05
Date of Next Scheduled EDR Contact: 06/20/05

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-4203
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/03
Database Release Frequency: Annually
Date of Last EDR Contact: 04/19/05
Date of Next Scheduled EDR Contact: 07/18/05

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/13/05
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/21/05
Date of Next Scheduled EDR Contact: 06/20/05

STATE OF HAWAII ASTM STANDARD RECORDS

SHWS: Sites List
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 02/15/05
Date Made Active at EDR: 04/13/05
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 03/22/05
Elapsed ASTM days: 22
Date of Last EDR Contact: 03/22/05

SWF/LF: Permitted Landfills in the State of Hawaii
Source: Department of Health
Telephone: 808-586-4245
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/19/04
Date Made Active at EDR: 06/22/04
Database Release Frequency: Varies
Date of Data Arrival at EDR: 05/20/04
Elapsed ASTM days: 33
Date of Last EDR Contact: 04/28/05

LUST: Leaking Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 02/01/05
Date Made Active at EDR: 03/29/05
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 02/15/05
Elapsed ASTM days: 42
Date of Last EDR Contact: 02/15/05

UST: Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 02/01/05
Date Made Active at EDR: 03/25/05
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 02/15/05
Elapsed ASTM days: 38
Date of Last EDR Contact: 02/15/05

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 01/05/05
Date Made Active at EDR: 02/08/05
Database Release Frequency: Varies
Date of Data Arrival at EDR: 01/06/05
Elapsed ASTM days: 33
Date of Last EDR Contact: 04/18/05

STATE OF HAWAII ASTM SUPPLEMENTAL RECORDS

SPILLS: Release Notifications
Source: Department of Health
Telephone: 808-586-4249
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 09/01/00
Database Release Frequency: Varies
Date of Last EDR Contact: 03/22/05
Date of Next Scheduled EDR Contact: 06/20/05

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

BROWNFIELDS DATABASES

BROWNFIELDS: Brownfields Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 01/05/05
Database Release Frequency: Varies
Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 06/20/05

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 01/05/05
Database Release Frequency: Varies
Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 06/20/05

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/10/05
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/14/05
Date of Next Scheduled EDR Contact: 06/13/05

INST CONTROL: Sites with Institutional Controls
Source: Department of Health
Telephone: 808-586-4249
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 01/05/05
Database Release Frequency: Varies
Date of Last EDR Contact: 04/18/05
Date of Next Scheduled EDR Contact: 06/20/05

US INST CONTROL: Sites with Institutional Controls
Source: Environmental Protection Agency
Telephone: 703-603-8867
A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/10/05
Database Release Frequency: Varies
Date of Last EDR Contact: 04/04/05
Date of Next Scheduled EDR Contact: 07/04/05

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

© 2004 Geographic Data Technology, Inc., Rel. 07/2004. This product contains proprietary and confidential property of Geographic Data Technology, Inc. Unauthorized use, including copying for other than testing and standard backup procedures, of this product is expressly prohibited.

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

WOMENS COMMUNITY CORRECTIONAL CENTER
42-477 KALANIANAOLE HIGHWAY
KAILUA, HI 96734

TARGET PROPERTY COORDINATES

Latitude (North):	21.375401 - 21° 22' 31.4''
Longitude (West):	157.748093 - 157° 44' 53.1''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	629790.1
UTM Y (Meters):	2364072.8
Elevation:	161 ft. above sea level

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

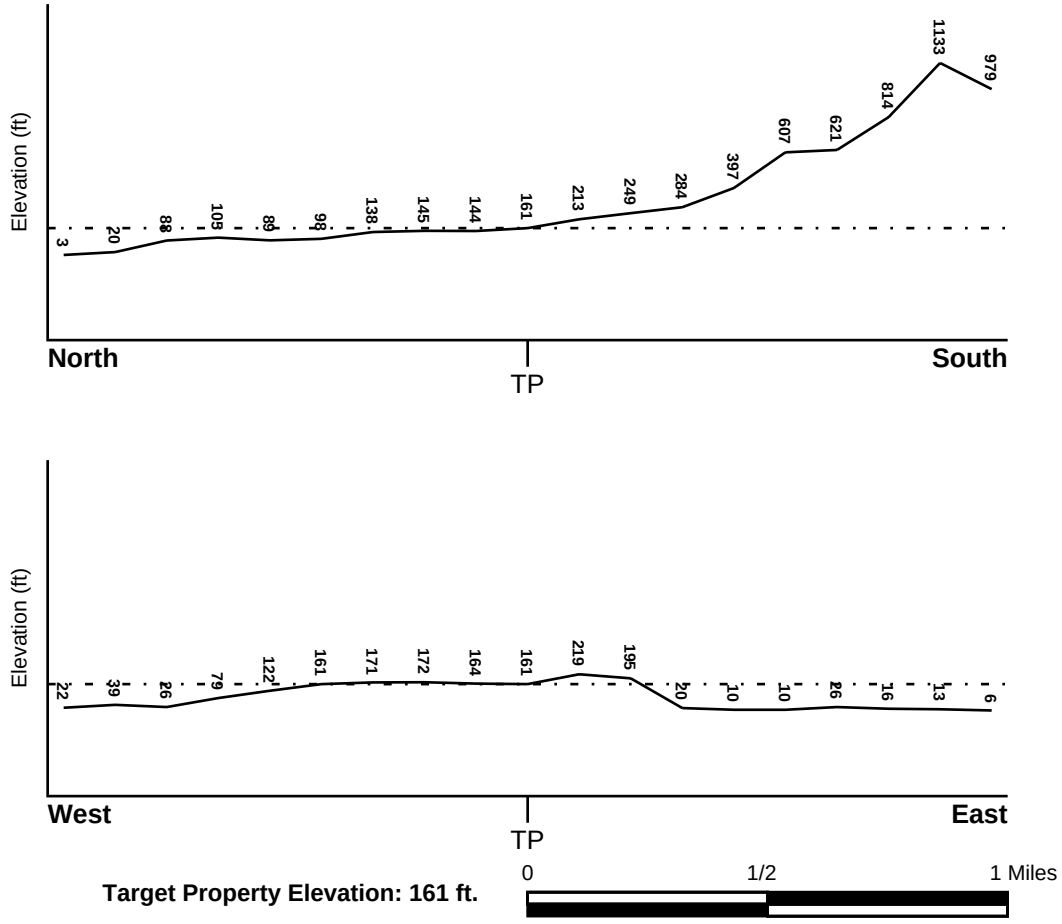
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

USGS Topographic Map:	21157-D6 MOKAPU, HI
General Topographic Gradient:	General North
Source:	USGS 7.5 min quad index

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
HONOLULU, HI	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 1500010090C

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era: -
System: -
Series: -
Code: N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name: WAIKANE

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	8 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Kaolinitic suffix for MH	Max: 6.00 Min: 2.00	Max: 5.00 Min: 4.50
2	8 inches	60 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Kaolinitic suffix for MH	Max: 6.00 Min: 2.00	Max: 5.00 Min: 4.50

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: silty clay loam
weathered bedrock
silt loam

Surficial Soil Types: silty clay loam
weathered bedrock
silt loam

Shallow Soil Types: silty clay

Deeper Soil Types: loam
stony - silty clay
gravelly - silty clay
silty clay loam
weathered bedrock

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

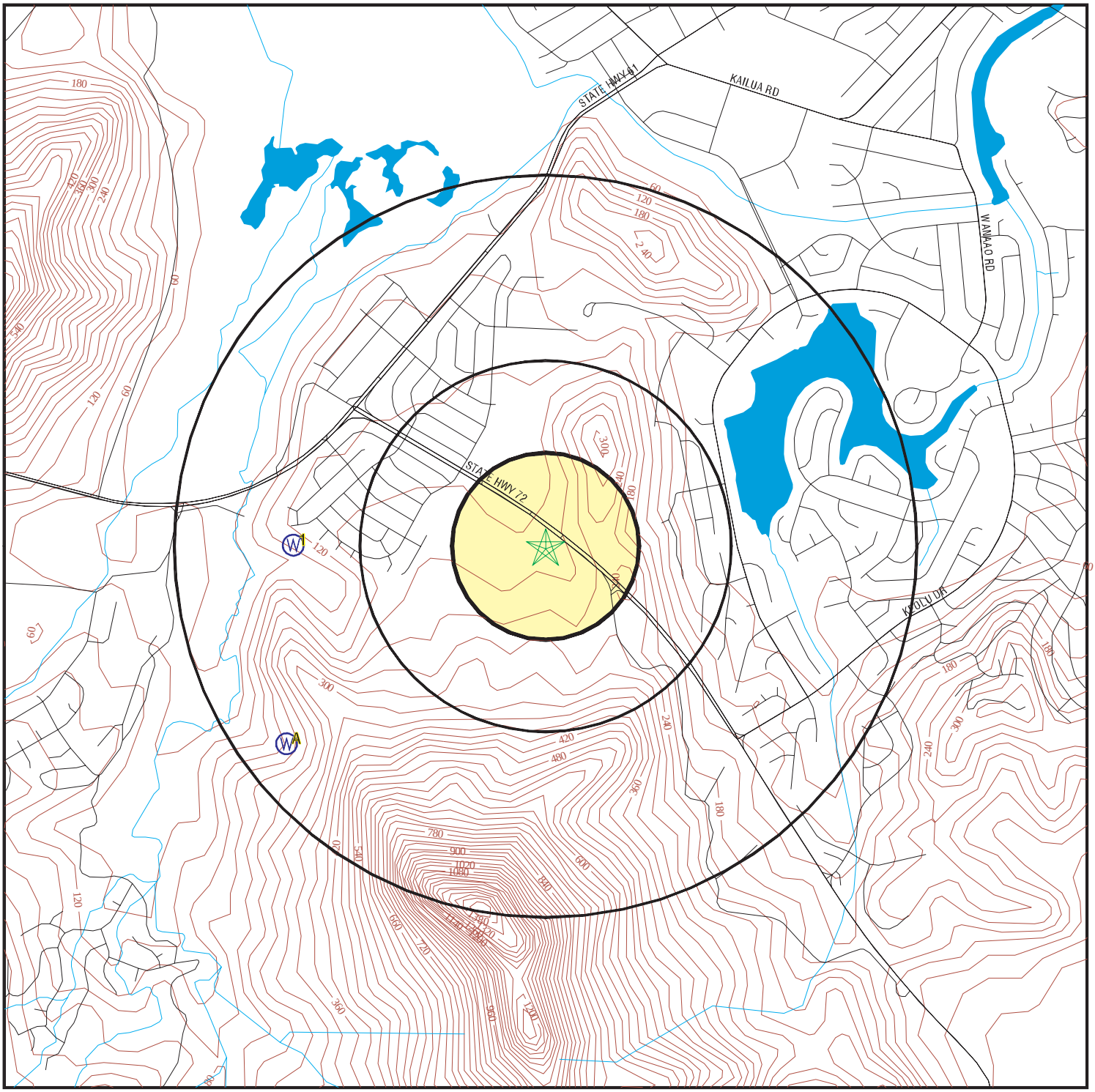
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	3-2245-004	1/2 - 1 Mile West
A2	3-2245-003	1/2 - 1 Mile SW
A3	3-2245-002	1/2 - 1 Mile SW
A4	3-2245-001	1/2 - 1 Mile SW

PHYSICAL SETTING SOURCE MAP - 01464211.1r



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location

N

TARGET PROPERTY:	Womens Community Correctional Center	CUSTOMER:	Env. Planning Solutions, LLC
ADDRESS:	42-477 Kalanianaole Highway	CONTACT:	Colette Sakoda
CITY/STATE/ZIP:	Kailua HI 96734	INQUIRY #:	01464211.1r
LAT/LONG:	21.3754 / 157.7481	DATE:	July 13, 2005 8:55 am

Copyright © 2005 EDR, Inc. © 2004 GDT, Inc. Rel. 07/2004. All Rights Reserved.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **West** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**3-2245-004**

Wid:	3-2245-004	Island Code:	3
Island Name:	Oahu	Well no:	2245-04
Well name:	Kailua-Mikami	Old name:	Not Reported
Yr drilled:	Not Reported	Driller:	Not Reported
Quad_map:	14	Latitude:	212243
Longitude:	1574541	UTM:	Y
Gps:	N	Owner/user:	Mikami K & T
Old number:	Not Reported	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	Not Reported
Ground Elev:	Not Reported	Well depth:	Not Reported
Solid casing Depth:	Not Reported	Perf casing Depth:	Not Reported
Use:	IRR	Use Desc:	Irrigation
Use year:	90	Water Top Elev:	0
Chloride value:	0	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	Not Reported
Min chlorides:	Not Reported	Min Cl year:	Not Reported
Bot_hole depth:	Not Reported	bot_solid depth:	Not Reported
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	4-2-006:001	Aquifer code:	30604
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	Not Reported
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

	Database	EDR ID Number
A2 **SW** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**3-2245-003**

Wid:	3-2245-003	Island Code:	3
Island Name:	Oahu	Well no:	2245-03
Well name:	Kailua C	Old name:	Not Reported
Yr drilled:	1948	Driller:	NAT WHITON
Quad_map:	15	Latitude:	212215
Longitude:	1574542	UTM:	Y
Gps:	N	Owner/user:	State Of Haw
Old number:	418-C	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	8
Ground Elev:	117	Well depth:	260

Solid casing Depth:	155	Perf casing Depth:	Not Reported
Use:	DOM	Use Desc:	Domestic
Use year:	74	Water Top Elev:	116.2
Chloride value:	28	Test date:	Not Reported
Pumping Test rate:	36	Drop in water Lvl:	75.0
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	112.2
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-143	bot_solid depth:	-38
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	4-2-006:002	Aquifer code:	30604
Latest head mmt:	112.2	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1948 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

A3
SW
1/2 - 1 Mile
Lower

HI WELLS **3-2245-002**

Wid:	3-2245-002	Island Code:	3
Island Name:	Oahu	Well no:	2245-02
Well name:	Kailua B	Old name:	Not Reported
Yr drilled:	1940	Driller:	MULLIN
Quad_map:	15	Latitude:	212215
Longitude:	1574542	UTM:	Y
Gps:	N	Owner/user:	State Of Haw
Old number:	418-B	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	6
Ground Elev:	107	Well depth:	200
Solid casing Depth:	136	Perf casing Depth:	Not Reported
Use:	DOM	Use Desc:	Domestic
Use year:	74	Water Top Elev:	119.4
Chloride value:	31	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-93	bot_solid depth:	-29
Bot_perf depth:	Not Reported	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	4-2-006:002	Aquifer code:	30604
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1940 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
HI WELLS	**3-2245-001**

A4
SW
1/2 - 1 Mile
Lower

Wid:	3-2245-001	Island Code:	3
Island Name:	Oahu	Well no:	2245-01
Well name:	Kailua A	Old name:	Not Reported
Yr drilled:	1940	Driller:	MULLIN
Quad_map:	15	Latitude:	212215
Longitude:	1574542	UTM:	Y
Gps:	N	Owner/user:	State Of Haw
Old number:	418-A	Well_type:	Not Reported
Type:	Not Reported	Casing dia:	6
Ground Elev:	108	Well depth:	135
Solid casing Depth:	69	Perf casing Depth:	129
Use:	SLD	Use Desc:	Sealed
Use year:	40	Water Top Elev:	0
Chloride value:	28	Test date:	Not Reported
Pumping Test rate:	Not Reported	Drop in water Lvl:	Not Reported
Chloride Test:	Not Reported	Temperature:	Not Reported
Units:	Not Reported	Pump Capacity:	0
Annual Draft:	Not Reported	Static Water Lvl:	Not Reported
Geology:	Not Reported	Geology desc:	Not Reported
Installed:	Not Reported	Last Measured:	Not Reported
Max chlorides:	Not Reported	Max Cl year:	0
Min chlorides:	Not Reported	Min Cl year:	0
Bot_hole depth:	-27	bot_solid depth:	39
Bot_perf depth:	-21	Well Capacity:	Not Reported
Pump Capacity:	Not Reported	Draft (mgd):	Not Reported
Tax map key:	Not Reported	Aquifer code:	30604
Latest head mmt:	0	Cur head mmt:	Not Reported
Current Cl mmt:	Not Reported	Const. Date:	01/01/1940 00:00:00
Pump Inst. Date:	Not Reported	Surveyor:	Not Reported
Transmissivity:	0	Pump intake elev:	Not Reported
Pump depth:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96734

Number of sites tested: 28

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.064 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002. 7.5-Minute DEMs correspond to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

ADDITIONAL ENVIRONMENTAL RECORD SOURCES

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STATE RECORDS

Ground Water Wells
Source: Department of Land and Natural Resources
Telephone: 808-587-0242

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

TERRITORY OF HAWAII

FIELD BOOK LAND SHEET

DESCRIPTION	1st. DIVISION			
	ZONE	SEC.	PLAT.	PARCEL
Ex Ord #1278 & 1347, Kawailoa	4	2	03	4

80V 552

OWNER	TITLE HISTORY	NET AREA
Territory of Hawaii		0.52ac
	(For 1949 12/29/48 TMB Ex. Ord. #576 has been cancelled)	
	(For 1949 12/29/48 87.00ac from 4-2-03-2)	
	(For 1949 12/29/48 78.09ac from 4-2-03-6) (2.9ac from 4-2-03-5)	165.610ac
	(For 1949 6.933ac to 4-2-03-2)	
	(For 1949 93.397ac to 4-2-03-6)	69.540ac
(Department of Institutions)	(For 1949 12/29/48 TMB by Executive order #1278)	69.540ac
	(For 1951 92.43ac from 4-2-03-6)	161.97ac
	For 1951 area corrected to 161.96ac TMB 10/16/50	161.96ac
	(For 1951 0.536ac from 4-2-03-6)	162.496ac
(Hawaiian Electric Co Ltd)	G L#3316: 11/20/50 fr T.H. 0.536ac 21 Yrs @ $12.00 Yr CSF 11028	162.496ac
	Exec Ord 1783 4/26/57 31.67 set aside for Kailua High School Site and drp into 4203-22 TMB 7.17.57	130.826ac
	(For 1962 1.787ac fr 423-8 & area revised to 131.786ac & 9.126ac to 423-22 & 8.212ac fr 423-22)	130.872ac
	Exec Ord #2112: Withdrawing 6.413ac 11/14/63	130.872ac
	(For 1964 6.413ac to 4203-08)	124.459ac
	Agrmt: 12/24/63 with C & C & S of H area not given (w/02) Cons. $10395 RS none 2/4/64 Bk 4680/164	124.459ac
	(For 1965 1.536ac dropped into road) (by Exec Ord #2153 - 7/1/64) TMB M8461'64	122.923ac
	(For 1967 1.50 ac to 4203-24 TMB 11465'66)	121.423ac
State of Hawaii	(For 1968 area revised to 120.50 ac TMB M-287'67)	120.50 ac
(Dept of Social Services)		
HAWAII YOUTH CORRECTIONAL FACILITY		
Exec Ord Nos. 1278, 1347, & 1964		
	(For 1968 14.0Ac to 4203-25 TMB 10171'67)	106.50 Ac
	(For 1968 26.40ac to 4203-26 TMB 14390'67)	80.10ac
	(For 1971-1972 expiration GL #L-3316 fr Hawn Elec (w/22) 11/3/70 TMB 12160'70-71	80.10ac

YEAR	1938	1939	1940	1941	1942	1943	1944	1945	1946	YEAR
AREA	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	AREA
LAND	200	200	225	225		227	227	227	225	LAND
IMP.										IMP.
TOT.	200	200	225	225		227	227	227	225	TOT.
EX.	200	200	225	225		227	227	227	225	EX.
NET	-	-	-	-		-	-	-	-	NET
TAX	-	-	-	-						

1st DIVISION

ZONE	SEC.	PLAT.	PARCEL
4	2	03	4

All

NO.	SYMBOL	FRONT	RATIO	DEPTH	LOT	AREA	U.F.V.	1951 VAL.	U.F.V.	1955 VAL.	U.F.V.	1956 VAL.	U.F.V.	VAL.
1	4			SCARFACE ACRES		5.624ac	07	15875	09	22050	105	25725		
2						63.916 -	300	- 191775	450	- 277620	630	- 402675		
3						30.000 -	260	- 7800	450	- 125100	630	- 189000		
4						30.000 -	30	- 900	60	1800	105	- 3150		
5						33.956"	6	- 198	9	297	1250	412		
6						162.496ac		46448		66409		924552		
7								1158						
8	2			Readjusted 1951 #		5.624ac	105	25725						
9						32.2ac	630	- 202815						
10						30.000	630	- 189000						
11						30.000	105	21150						
12						33.956	1250	412						
13						130.826ac		458502						
14								1960						
15						130.826ac	2100	- 274725						
16								1961		19.4				
17						130.826ac	2100	- 274831						
18														

YEAR	1947	YR.	1948	YR.	1949	YR.	1950	YR.	1951	YR.	1952	YR.	1953	YR.	1954
AREA	0.52ac	AR.	225009	AR.	69.54ac	AR.	69.54 Ac	AR.	162.496Ac.	AR.	162.496Ac	AR.	162.496ac	AR.	162.496Ac
LAND VALUE	563	L	563	L	37550	L	37550	L	46448	L	66409	L	66409	L	66409
IMPROVEMENT	1500	I	1500	I	5283	I	474291	I	462542	I	675120	I	624044	I	607322
TOTAL	2063	T	2063	T	42833	T	511841	T	508990	T	741529	T	690453	T	673731
LESS EX.	2063	EX.	2063	EX.	42833	EX.	511841	EX.	508990	EX.	741529	EX.	690453	EX.	673731
NET TAX VALUE	-	N.T.	-	N.T.	-	N.T.	S.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.
TAXES	-		-		-		-		-						-

YEAR	1955	YR.	1956	YR.	1957	YR.	1958	YR.	1959	YR.	1960	YR.	1961	YR.	1962
AREA	162.496Ac	AR.	162.496ac	AR.	162.496ac	AR.	130.826Ac	AR.	130.826ac	AR.	130.826ac	AR.	130.826ac	AR.	130.826ac
LAND VALUE	66409	L	58654	L	88454	L	68502	L	68502	L	274735	L	274735	L	274831
IMPROVEMENT	590601	I	814238	I	798552	I	782817	I	767083	I	766855	I	755120	I	743572
TOTAL	657010	T	902742	T	887006	T	851319	T	835585	T	1041590	T	1029855	T	1018403
LESS EX.	657010	EX.	902742	EX.	887006	EX.	851319	EX.	835585	EX.	1041590	EX.	1029855	EX.	1018403
NET TAX VALUE	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	S.H.	N.T.	-	N.T.	-

1. TOPOG
LEVEL
SLOPING
GRADE
H ☐

DESCI

DIVISION				
ZONE	SEC.	PLAT.	PARCEL	
4	2	03	04	4211 4213

NO.	SYMBOL	RATIO	AV. DEPTH	AREA	U.V.	YR. 1962 VAL.	U.V.	YR. VAL.	U.V.	YR. VAL.	U.V.	YR. VAL.
1				124.459 Ac	4900 –	609849						
2						1965		1967				
3				122.723 Ac	4900 –	603322	7000 –	–				
4						1967						
5				121.423 Ac	7000 –	849961						
6						1961		1965				
7				80.10 Ac	7000 –	560700	14000 –	1,121,400				
8						1970						
9	4			68.22 Ac	14000 –	955080	17250 –	1176795				
10	C			11.88 Ac	2800 –	33264	2800 –	33264				
11				80.10 Ac		988344		1,210059				
12												
13						1976 – 1977		1978		1979		1980
14				80.10 Ac		2178107		2,287,012		2,424,233		2545445
15						1981		1982		1983 – 84 85		1986
16						3818168		4009076		6621793		6621793
17												
18												

AREA	0.52ac	AR.	225005	AR.	69.54ac	AR.	69.54 Ac	AR.	162.496 Ac	AR.	162.496 Ac	AR.	162.496 Ac	AR.	162.496 Ac
LAND VALUE	563	L	563	L	37550	L	37550	L	46448	L	66409	L	66409	L	66409
IMPROVEMENT	1500	I	1500	I	5283	I	474291	I	462542	I	675120	I	624044	I	607322
TOTAL	2063	T	2063	T	42833	T	511841	T	508990	T	741529	T	690453	T	673731
LESS EX.	2063	EX.	2063	EX.	42833	EX.	511841	EX.	508990	EX.	741529	EX.	690453	EX.	673731
NET TAX VALUE	–	N.T.	–	N.T.	–	N.T.	S.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.
TAXES	–		–		–		–		–						–
YEAR	1955	YR.	1956	YR.	1957	YR.	1958	YR.	1959	YR.	1960	YR.	1961	YR.	1962
AREA	162.496 Ac	AR.	162.496 ac	AR.	162.496 ac	AR.	130.826 A	AR.	130.826 Ac	AR.	130.826 ac	AR.	130.826 ac		130.872 ac
LAND VALUE	66409	L	58454	L	88454	L	68502	L	68502	L	274735	L	274735	L	274831
IMPROVEMENT	590601	I	814288	I	798552	I	782817	I	767083	I	766855	I	755120	I	743572
TOTAL	657010	T	902742	T	887006	T	851319	T	835585	T	1041590	T	1029855	T	1018403
LESS EX.	657010	EX.	902702	EX.	887006	EX.	851319	EX.	835585	EX.	1041590	EX.	1029855	EX.	1018403
NET TAX VALUE	T.H.	N.T.	[illegible]	N.T.	T.H.	N.T.	T.H.	N.T.	T.H.	N.T.	–	N.T.	–	N.T.	–
							–		–		S.H.		–		–

DEPARTMENTAL FORM P 17

DEPARTMENT OF TAXATION

RESIDENTIAL APPRAISAL CARD

RECAP GOV'T

1. DEPRECIATION						2. BLDG. PERMIT RECORD				
B. NO.	YR. CONSTR.	AGE	LIFE EXP.	% GD.	ADJ. %	PUR.	DATE	PER. NO.	AMOUNT	BP BY

3. ADD'L L. IMPVTS

PAVED AREAS ☐ TERR/PATIOS ____ SQ. FT.
RET. WALL ☐ FENCES ____ LIN. FT.
LAWN-LDSC ☐ BARBEC. ____ CU. FT.
WALK WAYS ☐ SWIM. POOL ____ SQ. FT.
SPRINKLERS ☐ SHAPE ____ AV. DEPTH ____

REMARKS

CARD ____ OF ____ CARDS

	ZONE	SEC.	PLAT	PARCEL
4.	4	2	03	04

5. ____ ADDRESS

6. CODE 102

7. USE

RES. ☐ AGR. ☐
COM'L ☐ INST. ☐
IND. ☐

8. COMPUTATION OF IMPROVEMENT VALUE

NO.	AREA	CF.	YR. 1983	CF.	YR. 1984	CF.	YR. 1985	CF.	YR. 86	CF.	YR. 1987	CF.	YR. 1988
			1474283	1	1452169		143086		[illegible]		[illegible]		1360179
			50165	2	49415		48674		47944		[illegible]		46517
			10530	3	10668		10508		10350		[illegible]		10042
			822	4	822		822		822		[illegible]		822
			745	5	745		745		745		[illegible]		745
			2358	6	2358		2358		2358		[illegible]		2358
			4432	7	4432		4432		4432		[illegible]		4432
			1543633		1520609		1497923		1475581	633	69811		66323
											1523284		1498215

DESCRIPTION OF IMPROVEMENTS

CARD ____ OF ____ CARDS

ZONE	SEC.	PLAT	PARCEL

SURVEY BY

DATE

9. USE TYPE & OCC.

	RENT.	HOME
1-FAM.	☐	☐
2-FAM.	☐	☐

14. ROOF DESIGN

CABLE ☐ HIP ☐
FLAT ☐ GAMB ☐

20. INTER. WALLS

TYPE
MAT

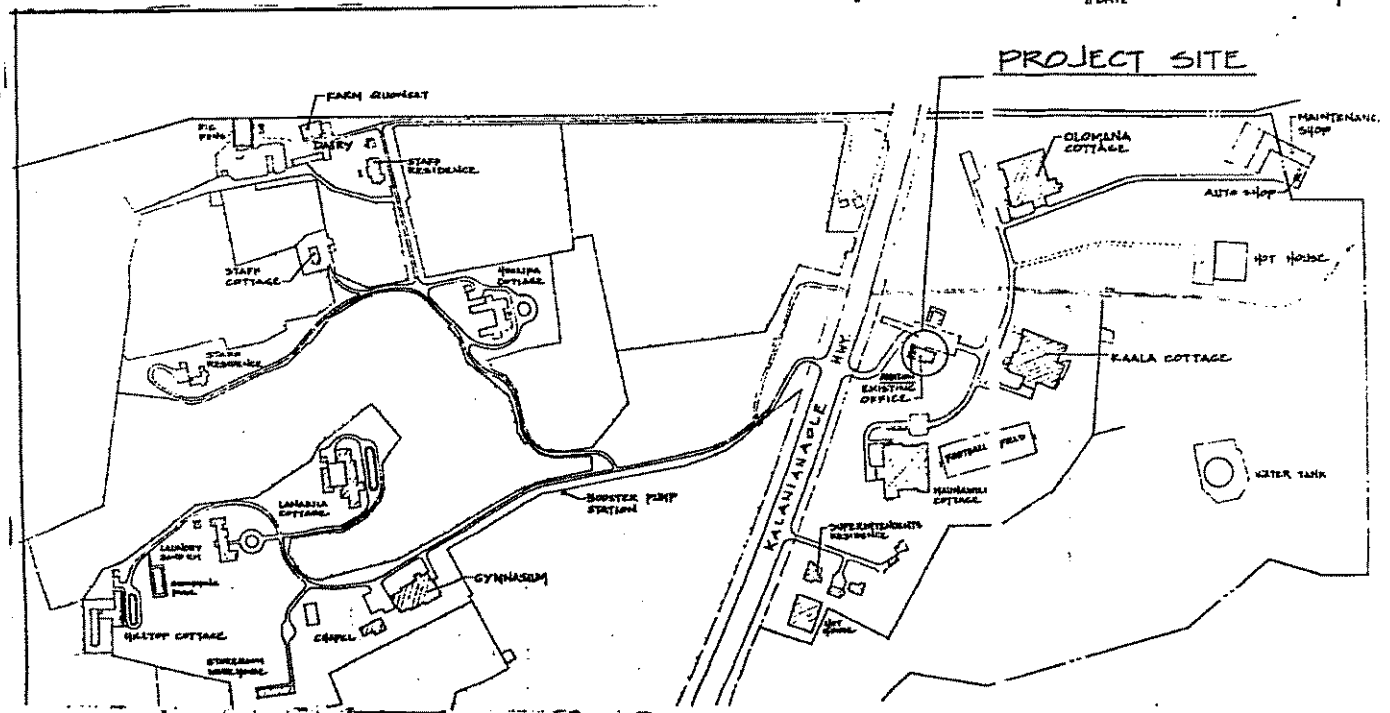
21. CEILING

CANEC ☐ PLAS ☐
PINE ☐ PLY ☐

22. BATHROOMS

1 ☐ 1½ ☐
2 ☐ 2½ ☐
3 ☐

PROJECT SITE



B & B
RUSTIC
BRICK
STONE/ROCK
HT
PLAS/STUCCO

TILE

19. ELECTRICAL

FIXT. CH ☐ M ☐ GD ☐
OUTL. S/ST ☐ ST ☐ VG ☐
BUILT/IN OVEN ☐ STOVE ☐
VENT ☐ D/WR ☐

28. CONDITION

BETTER THAN EVER ____%
AVERAGE (NOR. DEP) ☐
BELOW AVER ____%

29. CLASSIFICATION

CLASS ____ S/CL ____
BY

SHAPE

SUB TOTAL DETAILS
TOTAL ITEMS 24 & 25

DEPARTMENTAL FORM P-17

DEPARTMENT OF TAXATION

RESIDENTIAL APPRAISAL CARD

Recap

1. DEPRECIATION						2. BLDG. PERMIT RECORD				
B. NO.	YR. CONSTR.	AGE	LIFE EXP.	% CD.	ADJ. %	PUR.	DATE	PER. NO.	AMOUNT	BP BY

3. ADD'L L. IMPVTS

PAVED AREAS ☐ TERR/PATIOS ____ SQ. FT.
RET. WALL ☐ FENCES ____ LIN. FT.
LAWN-LDSC ☐ BARBEC. ____ CU. FT.
WALK WAYS ☐ SWIM. POOL ____ SQ. FT.
SPRINKLERS ☐ SHAPE ____ AV. DEPTH ____

REMARKS
1963 - 732,208

CARD ____ OF ____ CARDS

	ZONE	SEC.	PLAT	PARCEL
4.	4	7	03	[illegible]

5. ADDRESS

6. CODE 5 [illegible]

7. USE

RES. ☐ AGR. ☐
COM'L. ☐ INST. ☐
IND. ☐

8. COMPUTATION OF IMPROVEMENT VALUE

NO.	AREA	CF.	YR. 1964	CF.	YR. 19[illegible]	CF.	YR. 1966	CF.	YR. 1967	CF.	YR. 1968	CF.	YR. 1969
	Card	#1	3124		2965	7	3102	1	819333	1	[illegible]	1	819333
		2	1663		1580	6	1651		25094	2	[illegible]	2	26331
		3	523		497	5	520		5497	3	5497	3	5685
		4	541		514	4	537		561	4	541	4	548
		5	5151		5074	3	5497		593	5	531	5	530
		6	789407		777566	1	842493		1651	6	1651	6	1651
		7	800409		788199		855800		3102	7	3102	7	3102
									855781		852[illegible]		857180
			1970		1971		72-73		1973 1974		1974-75		1975-76
		1	819333	1	901266		927696		[illegible]		1004045		1147221
		2	27881	2	6404		6592		[illegible]		34165		39037
		3	6020	3	575		575		575		7376		8427
		4	560	4	556		552		521		575		575
		5	542	5	1651		1651		1651		521		521
		6	1651	6	3102		3102		3102		1651		1651
		7	3102	7	913554		40168		920944		3102		3102
			859089								1051435		1200534
			1976 - 1977		1977		1978		1979		1980		1981
		633 1	983283		968534		954006	1	934696		925601		911717
		2	33459		32957		32463	2	31976		31496		31024
		3	7223		7115		7008	3	6903		6799		6697
		611 4	493		493		493	4	493		493		493
		5	447		447		447	5	447		447		447
		6	1415		1415		1415	6	1415		1415		1415
		7	2659		2659		2659	7	2659		2659		2659
		1987	1028979		1013620		998491		983589		968910		954452
		898041											
		30559											
		6597											
		493											
		447											
		1415											
		2659											
		940211											

TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET CE[illegible]	DIVISION			
			ZONE	SEC.	PLAT.	PARCEL
			4	2	03	4

BUILDING COMPUTATIONS

BLD.	POR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR 1960 AGE	COND	%G	VALUE	YEAR 1949 AGE	COND	%G	VALUE	YEAR 1950 AGE	COND	%G	VALUE	YEAR 1951 AGE	COND	%G	VALUE
FROM [illegible] SHEET No.				1						3550				1612				[illegible]				[illegible]
				2						1889				631				[illegible]				[illegible]
				3						595				294				[illegible]				[illegible]
				4						615				276				[illegible]				[illegible]
				5						5067				980				1159				[illegible]
				6						755139		C&C		1500				1500				[illegible]
										766855				1962				[illegible]				[illegible]
										3377	1961			3204				1963 2044				1964
										1795				1705				1620				3124
										565				537				510				1663
										584				555				527				523
										4991				4916				4842				541
										743812				732655				721665				5151
TOTAL				TOTAL			TOTAL			755120				743572				732208				767707
										1500												778709

BLD.	POR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR 1952 AGE	COND	%G	VALUE	YEAR 1953 AGE	COND	%G	VALUE	YEAR 1956 AGE	COND	%G	VALUE	YEAR 1955 AGE	COND	%G	VALUE
										2702				2702				[illegible]				2702
										1041				1041				1041				1041
										417				399				[illegible]				362
										385				360				335				308
										2514				2514				2514				—
										668061				617028				600350				2514
										675120				624044				607322				583674
																						590,601
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

See Card

BLD.	POR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR 1956 AGE	COND	%G	VALUE	YEAR 1957 AGE	COND	%G	VALUE	YEAR 1958 AGE	COND	%G	VALUE	YEAR 59 AGE	COND	%G	VALUE
										3944				3944				3944				3944
										2099				2099				2099				2099
										481				437				433				410
										562				476				450				424
										5067				5067				5067				5067
										802195				786509				770824				755139
										814288				798552				782817				767,083
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

ENVIRONMENTAL FORM P-17

DEPARTMENT OF TAXATION

RESIDENTIAL APPRAISAL CARD 142

1. DEPRECIATION

B. NO.	YR. CONSTR.	AGE	LIFE EXP.	% CD.	ADJ. %

2. BLDG. PERMIT RECORD

PUR.	DATE	PER. NO.	AMOUNT	BP BY
ALTER CLEAN	7-23-86	C10874	11,350	CF. NEW YORK CORP FIN
ADDN ALTER	10/8/85	2M665	30,000	" " " " "

3. ADD'L L. IMPVTS

PAVED AREAS ☐ TERR/PATIOS _____ SQ. FT.
RET. WALL ☐ FENCES _____ LIN. FT.
LAWN-LDSC ☐ BARBEC. _____ CU. FT.
WALK WAYS ☐ SWIM. POOL _____ SQ. FT.
SPRINKLERS ☐ SHAPE _____ AV. DEPTH _____

REMARKS
NV 11/12/86

CARD _____ OF _____ CARD

	ZONE	SEC.	PLAT	PARCEL
4.	4	2	03	04

5. ADDRESS

6. CODE 1 — —

7. USE

RES. ☐ AGR. ☐
COM'L ☐ INST. ☐
IND. ☐

8. COMPUTATION OF IMPROVEMENT VALUE

NO.	AREA	CF.	YR. 1984	CF.	YR. 1985	CF.	YR. 86	CF.	YR. 87	CF.	YR. 1988	CF.	YR.
			1452169		1430816		[illegible]		1377796		1366979		
			49415		48674		[illegible]		47[illegible]		46517		
			1501584		1917[illegible]0		1456[illegible]74		1425021		1413496		

FIELD BOOK BUILDING SHEET

TERRITORY OF HAWAII

OWNER (PENCIL ONLY) | OCCUPANT OR LESSEE (PENCIL ONLY) | BUILDING SHEET # (L) 1 | DIVISION

ZONE 2 | SEC. 2 | PLAT. 3 | PARCEL --

BUILDING COMPUTATIONS

BLD.	POR	DEP RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
						390000
						Kees
						398,005
TOTAL				TOTAL		TOTAL

YEAR 1950

AGE	COND.	%	VALUE
N	G	100	390 000
		T80	76,050
			466,050
			1956
4	G	90	351808
"	"	"	T20H
			35202
	16Y2		6007.50
TOTAL			TOTAL

YEAR 1951

AGE	COND.	%	VALUE
1	G	T75	350 250
		T80	70 050
			420,300
			1955
5	G	85	348,254
"	"	"	
	1676		583674
			TH.
TOTAL			TOTAL

YEAR 1952

AGE	COND.	%	VALUE
2	G	95	370,500
4	G	100	8005
			378,505
	1676		668061
TOTAL			TOTAL

YEAR 53

AGE	COND.	%	VALUE
3	G	95	362750
1	0	4	7400
			370150
			617038
TOTAL			TOTAL

YEAR 1956

BLD.	POR	DEP RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
1		1%				896307
		"				
31,660	@	70¢	=			21700
TOTAL				TOTAL		TOTAL

YEAR 1956

AGE	COND.	%	VALUE
6	G	89	80187
"	"	"	T.H.
			AM
			1965
10			755139
			1964
			76 7707
N		100	21700
			78940 7
TOTAL			TOTAL

YEAR 1957

AGE	COND.	%	VALUE
7	G	85	786509
			1961
			743812
			1965
			25 6191
✓			21375
✓			777566
TOTAL			TOTAL

YEAR 1958

AGE	COND.	%	VALUE
8	G	86	710824
			1962
			732655
			1966
			819333
			23160
			842493
TOTAL			TOTAL

YEAR √9

AGE	COND.	%	VALUE
9	G	84	755139
			1963
			721665
			1967
1	1		819333
			25094
			844427
TOTAL			TOTAL

YEAR 1968

BLD.	POR	DEP RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
						925601
						31496
						957097
						1981
						911717
						31024
						942741
						1982
						899041
						30559
		1%				928600
		NEW				1983
						1474243
						50169
						1524412
TOTAL				TOTAL		TOTAL

YEAR 1968

AGE	COND.	%	VALUE
			819333
			25631
			844964
			72-73
			897166
			30630
			927796
			1976 - 1977
			983283
			33454
			1116737
TOTAL			TOTAL

YEAR 1969

AGE	COND.	%	VALUE
		1	819333.
		2	26331
			845664
			1975 1976
			875737
			29902
			905639
			1977
			961534
			27967
			1001491
TOTAL			TOTAL

YEAR 1970

AGE	COND.	%	VALUE
		1	819333
		2	27881
			847214
			1974: 75
			1004045
			34161
			1038210
			1978
			954006
			32463
			986469
TOTAL			TOTAL

YEAR

AGE	COND.	%	VALUE
			771606
			24663
			901261
			1975-76
			1147231
			39037
			1186258
			1979
			994646
			21976
			771672
TOTAL			TOTAL

PERMIT NO.	DATE	AMOUNT	CONTRACTOR	SURVEY BY	DATE	REMARKS
71114	2-17-49	650,000	M. AKIONA	LUKEMA	12-19-48	Kawaiee Tenure Sensor
71571	1-25-51	16,926	Nordic Constr.	Lancaster	6-18-51	New Supt. Cottage - Dept. of Institution
71800	3-1-51	300	A.L. Kilgore & Co.	"	"	moving Dwyer Bks. Koolau Boys Home - N.Y.
103578	2-3-1953	900	M. Jap. use moves	"	10-28-63	" apart. " " " N.Y.
208375	5-9-63	31,000	Reliable Bldg	Reddy	1-3-58	Re-up
218110	1-28-64	375	State of Hawaii	Ferreira	5-27-64	Adm Institution (Koolau Boys Home)
218111	"	110	" "	"	"	Demolition Dwg Gar

1012-59

S/X

633

TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET #5	3 DIVISION
			ZONE 4 · SEC. 2 · PLAT. 03 · PARCEL 4

BUILDING COMPUTATIONS

BLD.	FOR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR 1947 AGE	COND	%G	VALUE	YEAR 48 AGE	COND	%G	VALUE	YEAR 49 AGE	COND	%G	VALUE	YEAR 1950 AGE	COND	%G	VALUE
			[illegible]							1500				1500				1500				[illegible]
																					+202	
										1500				1500				1500				
										1951				1952				53				
										1500				1500				1500				
								+20%		300												
										1800		1676		2514				2514				2514
										1955												
						[illegible]		32		1500												
								1676		2514												
TOTAL				TOTAL			TOTAL			~~1500~~	TOTAL			~~1500~~	TOTAL				TOTAL			

BLD.	FOR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR 1956 AGE	COND	%G	VALUE	YEAR 1957 AGE	COND	%G	VALUE	YEAR 1958-59 AGE	COND	%G	VALUE	YEAR AGE	COND	%G	VALUE
		3				16890	30	M	30	5067	31	M	30	5067	32	M	30	5067				
										AM												
										1960				1961				1962				1963
							34			5067				4991				4916				4842
										1964												
										5151				[illegible]				1966				1967
														5074				5497				5497
										1968				1969				1970				1971
										5499				5685				6020				6404
										72-73				1973 1974				1974-75				1975-76
										6592				6456				7376				8427
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

BLD.	FOR	DEP RATE	AREA OR CUBE	$/C	FACTOR	REPLACEMENT	YEAR AGE	COND	%G	VALUE	YEAR AGE	COND	%G	VALUE	YEAR AGE	COND	%G	VALUE	YEAR AGE	COND	%G	VALUE
										1976 - 1977				1977				1978				1979
										7223				7115				7008				[illegible]
										1980				1981				1982				[illegible]
										6799				6697				6597				10830
										1984				1985				[illegible]				[illegible]
										10668				10508				10350				[illegible]
										1988												
										10042												
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET #	DIVISION
	CLEARWATER CT. NO.	1	4

ZONE	SEC.	PLAT.	PARCEL
4	2	38	4

BUILDING COMPUTATIONS

BLD.	POR	DEP. RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
1		4	254	=	1.09	354
TOTAL				TOTAL		

YEAR 1947			
AGE	COND.	%	VALUE
?	G	60	20-
Replaced car # 2			
			1151
?	G	64	246
			49
			295
			1955
9/13	G	48	184
			1676
			308
			1984
TOTAL			

YEAR 1948			
AGE	COND.	%	VALUE
?	G	76	392
			392
			1952
?	G	60	230
			1676
			385
TOTAL TO 1952			

YEAR 1949			
AGE	COND.	%	VALUE
?	G	72	276
			276
			53
?	G	56	215
			360
TOTAL			

YEAR 1950			
AGE	COND.	%	VALUE
			4284
		52	
			1676
TOTAL			

BLD.	POR	DEP. RATE	AREA OR CUBE
		3	
CL-1			564
TOTAL			

YEAR		
% C	FACTOR	REPLACEMENT
		565
TOTAL		

YEAR			
AGE	COND.	%	VALUE
9/16	G	58	504
			1960
			615
			1964
			541
			1969
			549
			72-73
			575
TOTAL			

YEAR 1957			
AGE	COND.	%	VALUE
9/16	G	55	476
			1961
			584
			514
			1969
			548
			1973 1974
			575
TOTAL			

YEAR 1958			
AGE	COND.	%	VALUE
9/16	G	54	450
			1962
			555
			1966
			537
			1970
			560
			1974 75
			575
TOTAL			

YEAR V9			
AGE	COND.	%	VALUE
17	G	44	424
			1963
			527
			1967
			561
			1971
			575
			1975-76
			575
TOTAL			

BLD.	POR	DEP. RATE	AREA OR CUBE
TOTAL			

YEAR		
% C	FACTOR	REPLACEMENT
TOTAL		

YEAR			
AGE	COND.	%	VALUE
			1975 - 1977
			493
		P	1980 81
			493
			1986
			822
TOTAL			

YEAR			
AGE	COND.	%	VALUE
			1977
			493
			1982
			493
			1987
			822
TOTAL			

YEAR			
AGE	COND.	%	VALUE
		L	1978
			493
			1983
			822
			1988
			822
TOTAL			

YEAR			
AGE	COND.	%	VALUE
			1979
			493
			1984 1985
			822
TOTAL			

FORM A.B. 17-25

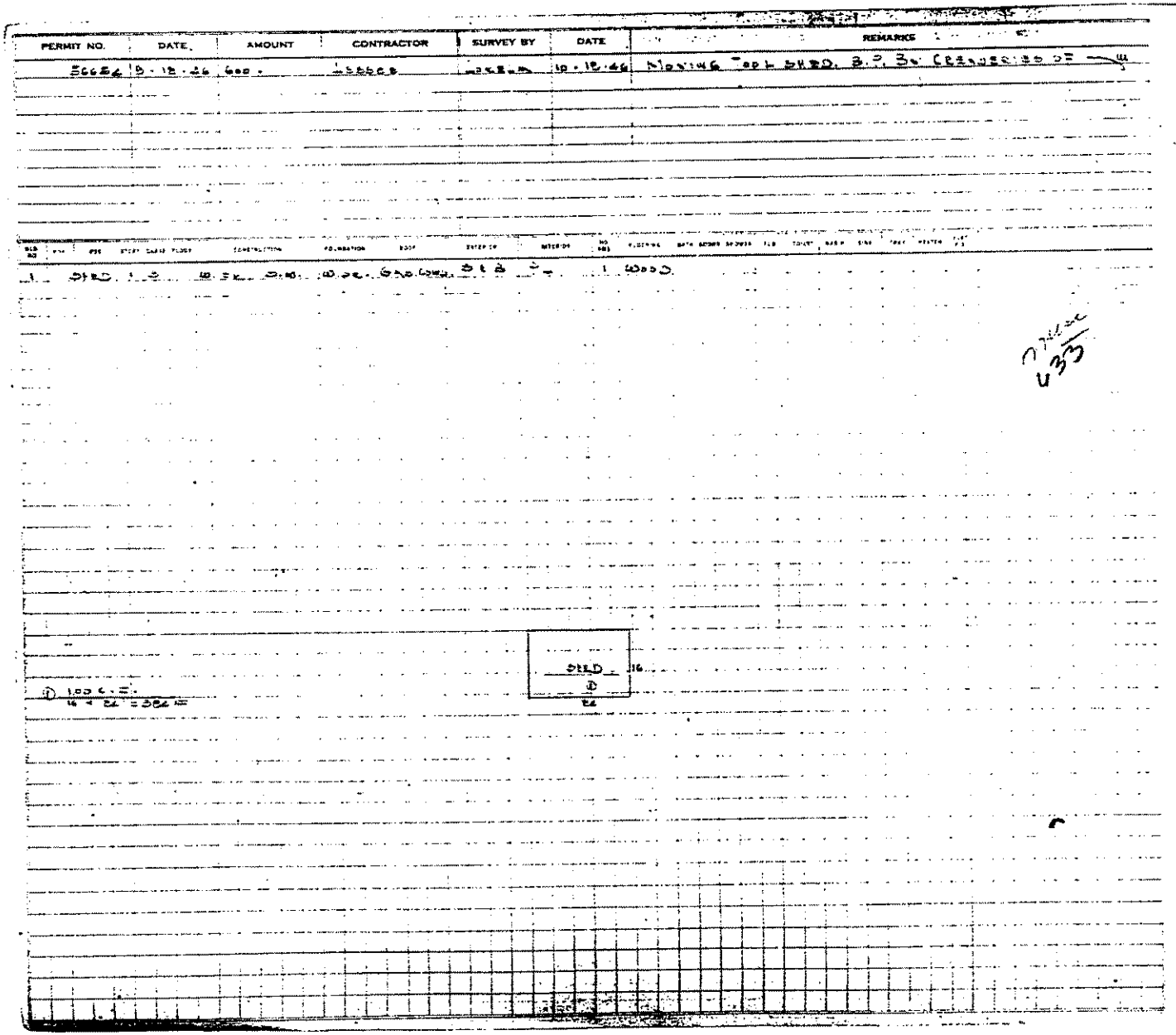
PERMIT NO.	DATE	AMOUNT	CONTRACTOR	SURVEY BY	DATE	REMARKS
56654	5-12-46	600.	[illegible]	[illegible]	10-12-46	MOVING TOOL SHED. B.P. 3x CREOSOTED OF [illegible]

NO.	[illegible]	[illegible]	STORY	CLASS	FLOOR	CONSTRUCTION	FOUNDATION	ROOF	EXTERIOR	INTERIOR	NO. [illegible]	FLOORING	BATH	BOWER	SHOWER	[illegible]	TOILET	[illegible]	SINK	[illegible]	HEATER	[illegible]
1	SHED	1	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	WOOD										

[illegible] 433

SHED 16
D
24

① 100 C.F.
16 × 24 = 384 #



TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET #3	DIVISION 5			
	ALLEGREE	1	ZONE	SEC.	PLAT.	PARCEL
			4	2	3	4

BUILDING COMPUTATIONS							YEAR 1949				YEAR 1950				YEAR 1951				YEAR 1952			
BLD.	FOR	DEP RATE	AREA OR CUBE	ϕ_c	FACTOR	REPLACEMENT	AGE	COND	%	VALUE	AGE	COND	%	VALUE	AGE	COND	%	VALUE	AGE	COND	%	VALUE
1		4	224	4	1.25	200	5	G	80	224	6	G	76	213	7	G	72	202	8	G	68	190
	3.5	CHICKEN COOP				T.O.				70		T.O.		70		T.O.		70		T.O.		70
														283				272				
												+20%		57		+20%		54				
										294				340				326				
										1952				1953				1954				1955
							9	G	64	179	10	G	60	168	11	G	56	157	12	G	52	146
						350		T.O.		70				70			"	70	"	T.O.		70
										249				238				227				216
								16	76	417				399		16	76	380		16	76	362
																						TH
TOTAL				TOTAL			TOTAL			294	TOTAL				TOTAL				TOTAL			

BLD.	FOR	DEP RATE	AREA OR CUBE	ϕ_c	FACTOR	REPLACEMENT	YEAR 1956				YEAR 1957				YEAR 1958				YEAR 59			
		3				788	13	G	61	481	14	G	58	457	15	G	55	433	16	G	52	410
										TH												
										AM												
										1960				1961				1962				1963
			224							575				565				537				510
							17			1964								1966				1967
										523				497				520				543
										1968				1969				1970				1971
										531				530				542				556
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

BLD.	FOR	DEP RATE	AREA OR CUBE	ϕ_c	FACTOR	REPLACEMENT	YEAR 1973 1974				YEAR 1974-75				YEAR 1975-76				YEAR 1976 - 1977			
						552				521				521				521				447
																		1980-81				1982
						1977				1978				1979				447				447
						447				447				447								
						1983				1984 1985-86				1987				1988				
						745				745				745				745				
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

FORM A. B. 17-8

PERMIT NO.	DATE	AMOUNT	CONTRACTOR	SURVEY BY	DATE	REMARKS
				LUKELA	2-15-49	R/S SHED No B.P. (ALLEGREE)

1 SHED 1 3 W/2 FR CON GAS C.I. C.I. PLAIN 1 CON
CHICKEN COOPS " " W/P SLANT COMP WIRE PLAIN - WIRE -

633



35 CHICKEN COOPS (2x6)
$70.00 VALUE

1 SHED 1 25 C.F.
14x16 = 224 ¢

TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET #2	6 DIVISION
		1	ZONE 4 · SEC. 3 2 · PLAT. 3 · PARCEL 4

BUILDING COMPUTATIONS

BLD.	POR	DEP RATE	AREA OR CUBE	$\frac{B}{C}$	FACTOR	REPLACEMENT	YEAR 1949 AGE	COND	%	VALUE	YEAR 1949 AGE	COND	%	VALUE	YEAR 1950 AGE	COND	%	VALUE	YEAR 1951 AGE	COND	%	VALUE
6		-	420		1.50	630	?	M	20	126	?	M	20									
7		-	200		2.50	500	"	"	"	100	?	M	20	621	?	M	20	621	?	M	20	621
8			1976		1.00	1976	"	"	"	395	"	"	"									
																+20		124		+20		[illegible]
								ASSESSED ON						621				745				[illegible]
										1952				53				52				[illegible]
						3106	?	M	20	126			20				20				20	
							"	"	"	100							"				"	621
							"	"	"	395				621			"	621			"	
										621												
														1041				1041		1676		1041
								1676		1041												TH
							TO HEDAP.															
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

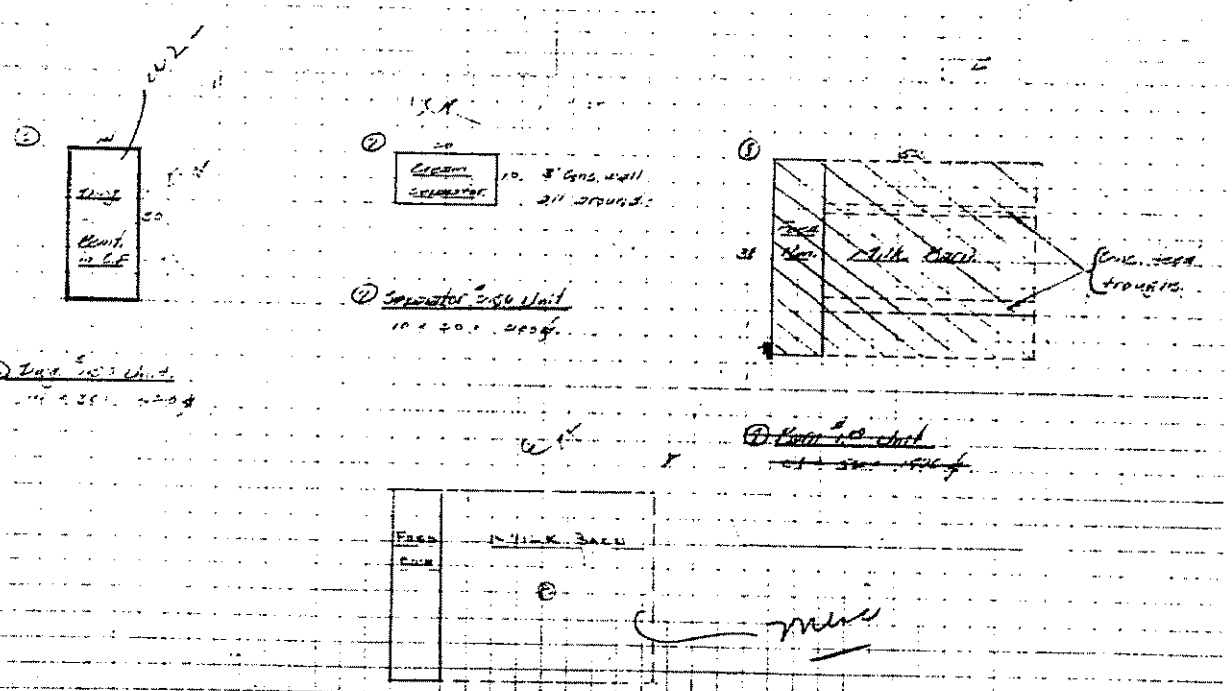
BLD.	POR	DEP RATE	AREA OR CUBE	$\frac{B}{C}$	FACTOR	REPLACEMENT	YEAR 1956 AGE	COND	%	VALUE	YEAR 1957 AGE	COND	%	VALUE	YEAR 1958 AGE	COND	%	VALUE	YEAR AGE	COND	%	VALUE
							30	M	30		31	M	30									
						6995	"	"	"	2099	"	"	"	2099	[illegible]	[illegible]	[illegible]	[illegible]				
							"	"	"		"	"	"									
										T.H.												
										AM												
										1960				1961				1962				1963
Dwl.			420											1795				1705				1620
BSW.			420																			
3 Plumb										1859				1964								1966
							34							1663								
[illegible]			200															1580				1651
[illegible]			1976																			
							34															
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

BLD.	POR	DEP RATE	AREA OR CUBE	$\frac{B}{C}$	FACTOR	REPLACEMENT	YEAR AGE	COND	%	VALUE	YEAR AGE	COND	%	VALUE	YEAR AGE	COND	%	VALUE	YEAR 1969 AGE	COND	%	VALUE
						1977								1967				1966				1651
						1415																
						1978								1651				1651				
						1415																
						1979								1970				1974				72-73
						1415								1651				1651				1651
						1980-81																
						1415				1973 1974				1974-75				1975-76				1976 - 1977
										1651				1651				1651				1415
						1982				[illegible]				1984 - 1985-86				1987				1988
						1415				2358				2358				2358				2358
TOTAL				TOTAL			TOTAL				TOTAL				TOTAL				TOTAL			

PERMIT NO	DATE	AMOUNT	CONTRACTOR	SURVEY BY	DATE	REMARKS
				Lukela	11-21-42	Resurveyed on appeal.
				"	2-15-49	Remove up Feed Rm. & Barn Trans. to Par #4
				"	"	" " 2nd Dwg. & Cream Separator Trans. from Par. #2

6	Dwg	1	3	Wd	Fr.	Sw.	Conc.	Gab.	C.I.	T&G	Plain	5	Pine	-			3	Plumb.	Sh.	
7	Cream Sep.	1	3	"	"	"	"	"	"	B&B	"	1	Conc.	-						
8	Barn	1	3	"	"	"	"	"	"	"	Setting	2	"	-						
9	[illegible]	1	3	"	Fr.	Sw.	Conc.	Gas.	C.I.	S&S	Plain	2	Conc.							
										Lock										

633



TERRITORY OF HAWAII

FIELD BOOK BUILDING SHEET

OWNER (PENCIL ONLY)	OCCUPANT OR LESSEE (PENCIL ONLY)	BUILDING SHEET #1	DIVISION

ZONE	SEC.	PLAT.	PARCEL
4	2	09	4

BUILDING COMPUTATIONS

BLD.	POR	DEP. RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
1		-	1326	0	= .49	3093
2		-	120	-	1 -	120
3	8	-	320	-	1 -.50	160
3	8	-	256	-	.35	90
4			1041		= .50	520
5		-	3648	..	1 -	3648
6			314	.	= .50	110
TOTAL					TOTAL	

YEAR	1941			
AGE	COND	%	VALUE	
7	M	20	618	
			24	
			10	
			18	
			730	
			110	
TOTAL				

ASSESSED ON PAR. # 2

TO RECAP

YEAR	1949			
AGE	COND	%	VALUE	
7	M	20	618	
			24	
			40	
			18	
			730	
			142	
TOTAL				

YEAR	1950			
AGE	COND	%	VALUE	
7	M	20	1612	
TOTAL				

YEAR	1951			
AGE	COND	%	VALUE	
7	M	20	1612	
TOTAL			1934	

BLD.	POR	DEP. RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
			1977			1978
			2659			2659
			1979			
			2659			
			1980			
			2659			
			1981			
			2659			
			1983			
			4432			
			1984			
			4432			
			1986			
			4432			
TOTAL					TOTAL	

YEAR	1952			
AGE	COND	%	VALUE	
7	M	20	1612	
TOTAL				

YEAR	1953			
AGE	COND	%	VALUE	
		20		
TOTAL				

YEAR	1954			
AGE	COND	%	VALUE	
TOTAL				

YEAR	1955			
AGE	COND	%	VALUE	
7	M	20		
TOTAL				

BLD.	POR	DEP. RATE	AREA OR CUBE	% C	FACTOR	REPLACEMENT
Dwlg			1326			
Vlt.						
Aplumb						
Lan.			270			
Addition			256			
Plumb						
Carport			284			
Barn			561			
Aplumb						
TOTAL					TOTAL	

YEAR	1960			
AGE	COND	%	VALUE	
TOTAL				

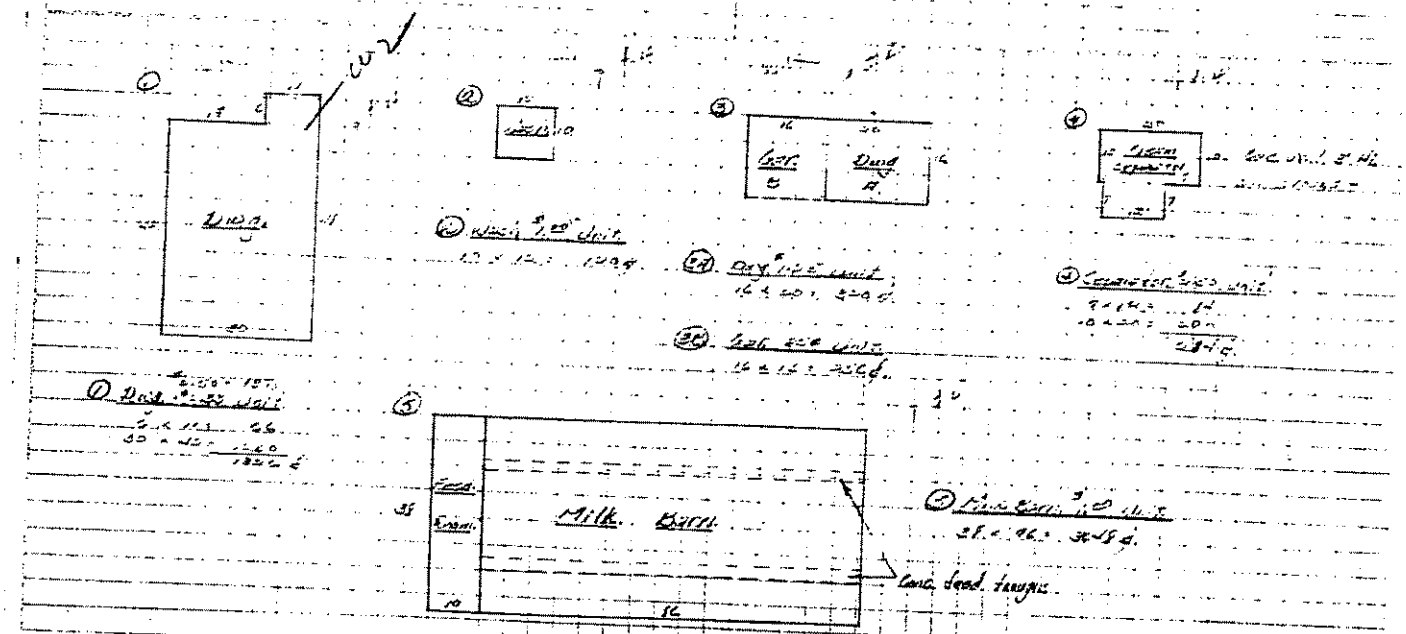
YEAR	1961			
AGE	COND	%	VALUE	
			3373	
			1964	
			3124	
			1967	
			3102	
			1970	
			3102	
			1974-75	
			3102	
TOTAL				

YEAR	1962			
AGE	COND	%	VALUE	
			3204	
			1965	
			1968	
			1967	
			3102	
			1970	
			3102	
			1974-75	
			3102	
TOTAL				

YEAR	1963			
AGE	COND	%	VALUE	
			3204	
			1966	
			3102	
			1969	
			3102	
			72-73	
			3102	
			1976 - 1977	
			2659	
TOTAL				

PERMIT NO.	DATE	AMOUNT	CONTRACTOR	SURVEY BY	DATE	REMARKS
				Luckels	11-27-42	Resurveyed - On appraisal.
					9-21-48	Area corrected Bldg #4.
168517	3-4-82	$57,575		"	2-15-49	Break up Trans. from PPE #2
168519	3-3-82	$57,575				RE-ROOF (BY STATE OF HAWAII)
157948	8-10-81	$8,500				REPAIR (BY " " ")
178974	4-28-83	18,000				ADDN OFFICE (BY Hawaii Youth Correctional)
						ADDN OFFICE (" " " ")

633



CITY & COUNTY OF HONOLULU
DF-RP-P-27
111-84)

DEPARTMENT OF FINANCE
COMMERCIAL & INDUSTRIAL APPRAISAL CARD

1. DEPRECIATION .950

B. NO.	YR. CONSTR.	AGE	LIFE EXP.	% GD.	ADJ %
	1987	New	20	100	

2. BLDG. PERMIT RECORD

PUR.	DATE	PER. NO.	AMOUNT	BP BY
Purchase	8/6/86	227161	69,811	State Youth Corr.

3. ADD'L IMPVTS.

Paved Areas ☐ Walkways ____
Ret. Walls ☐ Sprinklers ____
Lawn-Ldsc. ☐ Fences ____

REMARKS
Jan 1/16/87

CARD ____ OF ____ CARDS

ZONE	SEC.	PLAT	PARCEL
4. 4	2	003	004

5. ADDRESS 42-477 Kalanianaole Hwy

6. CODE 850

7. USE
COM'L ☐ AGR. ☐
IND. ☐ INST. ☐

8. COMPUTATION OF IMPROVEMENT VALUE

NO.	AREA	CF.	YR. 1987	CF.	YR. 1988	CF.	YR.	CF.	YR.	CF.	YR.	CF.	YR.
		633	69811		663.20								

CITY AND COUNTY OF HONOLULU PARCEL HISTORY (TT101) FOR:
TMK: 4-2-003-004-0000

10/07/1987 ----------

GROUP#	NAME	F	TC	%-OWNER	TITLE-DESC
2	0011 STATE OF HAWAII				

FOR ASSESSMENT YEAR 2005				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 2004				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 2003				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 2002				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 2001				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 2000				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1999				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1998				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1997				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1996				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1995				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1994				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1993				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1992				
PITT 1	LAND VALUE:	$12,015,000	EXEMPT LAND VALUE:	$12,015,000
	BUILDING VALUE:	$1,548,000	EXEMPT BUILDING VALUE:	$1,548,000
FOR ASSESSMENT YEAR 1991				
PITT 8	LAND VALUE:	$8,010,000	EXEMPT LAND VALUE:	$8,010,000
	BUILDING VALUE:	$1,498,400	EXEMPT BUILDING VALUE:	$1,498,400
FOR ASSESSMENT YEAR 1990				
PITT 8	LAND VALUE:	$7,008,800	EXEMPT LAND VALUE:	$7,008,800
	BUILDING VALUE:	$1,498,100	EXEMPT BUILDING VALUE:	$1,498,100
FOR ASSESSMENT YEAR 1989				
PITT 8	LAND VALUE:	$7,008,800	EXEMPT LAND VALUE:	$7,008,800
	BUILDING VALUE:	$1,498,100	EXEMPT BUILDING VALUE:	$1,498,100
FOR ASSESSMENT YEAR 1988				
PITT 8	LAND VALUE:	$6,681,793	EXEMPT LAND VALUE:	$6,681,793
	BUILDING VALUE:	$1,498,215	EXEMPT BUILDING VALUE:	$1,498,215

CITY AND COUNTY OF HONOLULU PARCEL HISTORY (TT101) FOR:
TMK: 4-2-003-004-0000

SITE ADDRESS: 42-455 KALANIANAOLE HWY

MAILING ADDRESS: STATE OF HAWAII
>

10/07/1987 ----------

GROUP#	NAME	F	TC	%-OWNER	TITLE-DESC
2	0011 STATE OF HAWAII				

----------SEE PARCEL SHEETS FOR MORE INFORMATION----------

DEPARTMENTAL
FORM P-28

RESIDENTIAL APPRAISAL CARD

CARD ____ OF ____ CARDS

ZONE SEC.		PLAT	PARCEL
4	2	003	026

1. TOPOGRAPHY
LEVEL ☐
SLOPING FT.
GRADE %
H ☐ L ☐

2. ST. IMPVTS
GRAVEL ☐
PAVED ☐
CURB ☐
GUTTER ☐
SIDE WK ☐

3. UTILITIES
WATER ☐
ELEC. ☐
GAS ☐
SEWER ☐
UNDERG'D ☐

4. USE
RES. ☐
COM'L ☐
IND. ☐
AGR. ☐
INST. ☐

5. ADD'L L. IMPVTS
PAVED AREAS ☐
RET. WALLS ☐ TERR/PATIOS ____ SQ. FT.
LAWN-LDSC. ☐ FENCES ____ LIN. FT.
WALK WAYS ☐
SPRINKLERS ☐ BARBEC. ____ CU. FT.
SWIM. POOL ____ SQ. FT.
SHAPE ____

6. 4 2 003 026
7. ____
8. ADDR ZONING 502
9. MOD. FACTOR ____
ST. DEPTH ____ CORNER ____
OTHER ____

DESCRIPTION: Kailua

OWNER	TITLE HISTORY	NET AREA
State of Hawaii (Dept of Social Services) Hawaii Youth Correctional Facility Por Exec Order 1347 (Robert A Via)	(For 1968 26.40ac fr 4203-04 TMB 14390'67)	26.40ac
	Rev Prmt S-4075: 10/1/67 fr S of H 26.40ac TMB 14390'67 Term: Bg 10/1/67 Rent: $10.00 mo Purpose: Pasture	26.40ac
	Rev Prmt S-4075 to Robert A Via 26.40ac canc 12/31/75 TMB 729'76)	26.40ac
	(For 1978-79 4203-26 (por) (0.476 Ac) withdrawn fr the operation of the Exec Ord 1347 per Exec Order 2832, CSF 17954 to be used as a 2nd Entrance Rdwy to Kailua High School to be under the control & mgmt of the DOE & designated as a por Perp Non-Excl Esmt "B" for access & drain purposes per Exec Order 2834, CSF 17912, dated 4/6/77 TMB M-269 & 271'77)	26.40Ac

YEAR											YEAR
AREA											AREA
LAND											LAND
IMP.											IMP.
TOT.											TOT.
EX.											EX.
NET											
TAX											

DIVISION				
ZONE	SEC.	PLAT.	PARCEL	
4	2	003	026	(4211) 4251

NO.	SYMBOL	RATIO	AV. DEPTH	AREA	U.V.	YR. 1958-69	U.V.	YR. VAL.	U.V.	YR. VAL.	U.V.	YR. VAL.
1	Rental	8 120	yr @ 6%	2000 @	70%	1400						
2						1972 - 1973		1976 - 1977	1978	1979 -80	1981	1982
3				26.40 AC	70 —	1848		1574		1574		1812
4						1983 -84-85		1986 -87				
5						3017		3017				
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												

YEAR		YR.		YR.		YR.		YR.		YR.		YR.		YR.	
AREA		AR.		AR.		AR.		AR.		AR.		AR.		AR.	
LAND VALUE		L		L		L		L		L		L		L	
IMPROVEMENT		I		I		I		I		I		I		I	
TOTAL		T		T		T		T		T		T		T	
LESS EX.		EX.		EX.		EX.		EX.		EX.		EX.		EX.	
NET TAX VALUE		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.	
TAXES															

YEAR		YR.		YR.		YR.		YR.		YR.		YR.		YR.	
AREA		AR.		AR.		AR.		AR.		AR.		AR.		AR.	
LAND VALUE		L		L		L		L		L		L		L	
IMPROVEMENT		I		I		I		I		I		I		I	
TOTAL		T		T		T		T		T		T		T	
LESS EX.		EX.		EX.		EX.		EX.		EX.		EX.		EX.	
NET TAX VALUE		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.	

CITY AND COUNTY OF HONOLULU PARCEL HISTORY (TT101) FOR:
TMK: 4-2-003-026-0000 PAGE:1

10/07/1987 ----------

GROUP#	NAME		F	TC	%-OWNER	TITLE-DESC	
2	0011 STATE OF HAWAII						
FOR ASSESSMENT YEAR 2005							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 2004							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 2003							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 2002							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 2001							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 2000							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1999							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1998							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1997							
PITT 8	LAND VALUE:	$1,932,900			EXEMPT LAND VALUE:		$1,932,900
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1996							
PITT 8	LAND VALUE:	$6,600,000			EXEMPT LAND VALUE:		$6,600,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1995							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1994							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1993							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1992							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1991							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1990							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1989							
PITT 5	LAND VALUE:	$528,000			EXEMPT LAND VALUE:		$528,000
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0
FOR ASSESSMENT YEAR 1988							
PITT 5	LAND VALUE:	$3,017			EXEMPT LAND VALUE:		$3,017
	BUILDING VALUE:	$0			EXEMPT BUILDING VALUE:		$0

CITY AND COUNTY OF HONOLULU PARCEL HISTORY (TT101) FOR:
TMK: 4-2-003-026-0000 PAGE:2

SITE ADDRESS: KAILUA RD

MAILING ADDRESS: STATE OF HAWAII
>

10/07/1987 ----------

GROUP#	NAME	F	TC	%-OWNER	TITLE-DESC
2	0011 STATE OF HAWAII				

----------SEE PARCEL SHEETS FOR MORE INFORMATION----------

TERRITORY OF HAWAII — LAND BOOK LAND SHEET

DESCRIPTION		1st. DIVISION			
		ZONE	SEC.	PLAT.	PARCEL
	Ex Ord #1278 & 1347, Kawailoa	4	2	03	4

LINE	OWNER	TITLE HISTORY	NET AREA
1	~~Territory of Hawaii~~	80V 5 5 2 (183)	0.52ac
2		(For 1949 12/29/48 TMB Ex. Ord. #576 has been cancelled)	
3		(For 1949 12/29/48 87.00ac from 4-2-03-2)	
4		(For 1949 12/29/48 78.09ac from 4-2-03-6) (2.9ac from 4-2-03-5)	165.610ac
5		(For 1949 6.033ac to 4-2-03-2)	80.510ac
6		(For 1949 93.397ac to 4-2-03-6)	80.510ac
7	(Department of Institutions)	(For 1949 12/29/48 TMB by Executive order #1278)	161.97ac
8		(For 1951 02.43ac from 4-2-03-6)	161.96ac
9		For 1951 area corrected to 161.96ac TMB 10/16/50	162.496ac
10		(For 1951 0.536ac from 4-2-03-6)	162.496ac
11	(Hawaiian Electric Co Ltd)	G L#3316: 11/20/50 fr T.H. 0.536ac 21 Yrs @ $12.00 Yr CSF 11028	
12		Exec Ord 1783 4/26/57 31.67 set aside for Kailua High School Site and drp into 4203-22 TMB 7.17.57	130.826ac
13		(For 1962 1.787ac fr 423-8 & area revised to 131.786ac & 9.126ac to 423-22 & 8.212ac fr 423-22)	130.872ac
14		Exec Ord #2112: Withdrawing 6.413ac 11/14/63	130.872ac
15		(For 1964 6.413ac to 4203-08)	124.459ac
16		Agrmt: 12/24/63 with C & C & S of H area not given (w/02) Cons. $10395 RS none 2/4/64 Bk 4680/164	124.459ac
17		(For 1965 1.536ac dropped into road) (by Exec Ord #2153 - 7/1/64) TMB M461'64	122.923ac
18		(For 1967 1.50 ac to 4203-24 TMB 11465'66)	121.423ac
19	State of Hawaii	(For 1968 area revised to 120.50 ac TMB M-287'67)	120.50 ac
20	(Dept of Social Services)		
21	HAWAII YOUTH CORRECTIONAL FACILITY		
22	Exec Ord Nos. 1278, 1347, & 1964		106.50 Ac
23		(For 1968 14.0Ac to 4203-25 TMB 10171'67)	80.10ac
24		(For 1968 26.40ac to 4203-26 TMB 14390'67)	
25		(For 1971-1972 expiration GL #L-3316 fr Hawn Elec (w/22) 11/3/70 TMB 12160'	70-71 80.10ac

YEAR	1938	1939	1940	1941	1942	1943	1944	1945	1946	YEAR
AREA	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	0.52ac	AREA
LAND	200	200	225	225		227	227	227	225	LAND
IMP.										IMP.
TOT.	200	200	225	225		227	227	227	225	TOT.
EX.	200	200	225	225		227	227	227	225	EX.
NET	-	-	-	-		-	-	-	-	NET
TAX	-	-	-	-						

DEPARTMENTAL
FORM P-26

RESIDENTIAL APPRAISAL CARD

CARD ____ OF ____ CARDS

ZONE SEC.		PLAT	PARCEL
6. 4	2	003	026

7. ____

8. ADDR ZONING 502

9. MOD. FACTOR ____

ST. DEPTH ____ CORNER ____

OTHER ____

1. TOPOGRAPHY	2. ST. IMPVTS	3. UTILITIES	4. USE	5. ADD'L L. IMPVTS
LEVEL ☐	GRAVEL ☐	WATER ☐	RES. ☐	PAVED AREAS ☐
SLOPING FT.	PAVED ☐	ELEC. ☐	COM'L ☐	RET. WALLS ☐ TERR/PATIOS ____ SQ. FT.
GRADE -	CURB ☐	GAS ☐	IND. ☐	LAWN-LDSC. ☐
H ☐ L ☐	GUTTER ☐	SEWER ☐	AGR. ☐	WALK WAYS ☐ FENCES ____ LIN. FT.
	SIDE WK ☐	UNDERG'D ☐	INST. ☐	SPRINKLERS ☐ BARBEC. ____ CU. FT.
				SWIM. POOL ____ SQ. FT.
				SHAPE ____

DESCRIPTION: Kailua

OWNER	TITLE HISTORY	NET AREA
State of Hawaii	(For 1968 26.40ac fr 4203-04 TMB 14390'67)	26.40ac
(Dept of Social Services)		
Hawaii Youth Correctional Facility		
Por Exec Order 1347		
(Robert A Via)	Rev Prmt S-4075: 10/1/67 fr S of H 26.40ac TMB 14390'67	26.40ac
	Term: Bg 10/1/67 Rent: $10.00 mo Purpose: Pasture	
	Rev Prmt S-4075 to Robert A Via 26.40ac canc 12/31/75 TMB 729'76)	26.40ac
	(For 1978-79 4203-26 (por) (0.476 Ac) withdrawn fr the operation of the	
	Exec Ord 1347 per Exec Order 2832, CSF 17954 to be used as a 2nd Entrance	
	Rdwy to Kailua High School to be under the control & mgmt of the DOE &	
	designated as a por Perp Non-Excl Esmt "B" for access & drain purposes	
	per Exec Order 2834, CSF 17912, dated 4/6/77 TMB M-269 & 271'77)	26.40Ac

YEAR										
AREA										
LAND										
IMP.										
TOT.										
EX.										
NET										
TAX										

Environmental Planning Solutions, LLC
945 Makaiwa Street
Honolulu, Hawaii 96816
Phone: 732-8602 Fax: 538-3168
Email: sakodac001@hawaii.rr.com

April 25, 2005

Honolulu Local Emergency Planning Committee
CO-Oahu Civil Defense
650 South King Street
Honolulu, HI 96813

Attention: Mr. Leland Nakai

Subject: Request for Tier 2 Reports

Dear Ms. Nakama:

Environmental Planning Solutions, LLC (EPS) is engaged in a hazardous site assessment project for a property located in Kailua, Oahu, Hawaii, identified as Tax Map Key nos. 4-2-03:004 and :026. These two parcels, portions of which are being planned to contain a new access road to Kailua High School, are also known as the Hawaii Youth Correctional Facility.

The site assessment includes the identification of facilities on the site or adjacent to it which store, use or generate hazardous materials/substances on their premises. It is our understanding that the Honolulu Local Emergency Planning Committee (LEPC) has maintained Tier 2 Reports under the Superfund Amendments and Reauthorization Act (SARA) Title III containing such information. We would be interested in receiving Tier 2 Reports for any such property or facility. The information will be used in a Phase I – Environmental Site Assessment. It would be greatly appreciated if you could respond as soon as possible.

Should you have further questions, please do not hesitate to contact me at 732-8602 (office) or 223-1408 (cell).

Sincerely,
ENVIRONMENTAL PLANNING SOLUTIONS, LLC

Colette Sakoda

Colette M. Sakoda
Principal

HONOLULU LOCAL EMERGENCY PLANNING COMMITTEE
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4121 • FAX: (808) 524-3439 • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

CARTER DAVIS
CHAIR

LELAND NAKAI
COORDINATOR

May 4, 2005

Ms. Colette M. Sakoda
Environmental Planning Solutions, LLC
945 Makaiwa Street
Honolulu, Hawaii 96816

Dear Ms. Sakoda:

Attached is a copy of the Tier II Report for Hawaiian Electric Company Koolau T&D Baseyard, 1387 Ulupii Street, Kailua, HI 96734 that is adjacent to your property of interest, as requested in your letter of April 25, 2005.

Please contact me at 527-5397 if I can be of further assistance.

Sincerely,

Leland Nakai
Coordinator, Honolulu LEPC

Attachment

Facility Name: Hawaiian Electric Company (HECO) - Koolau T&D Baseyard

****
****

FACILITY IDENTIFICATION:
Hawaiian Electric Company (HECO) - Koolau T&D Baseyard
Dept:
1387 Ulupii Street
Kailua, HI 96734 USA
County: Honolulu
Number of employees:

IDENTIFICATION NUMBERS:
SIC: 4911 (ELECTRICAL SERVICES)
Dun & Bradstreet: 6926927 (Hawaiian Electric Company, Inc.)

CONTACT INFORMATION:

Hawaiian Electric Co., Inc. (HECO),
Contact Type 1: Owner / Operator
Address: P.O. Box 2750, Attn: Env. Dept., Honolulu, HI, 96840 USA
Phones: : 808-543-7771

Kaneko, David
Title: Environmental Scientist Contact Type 1: Regulatory Point of Contact
Address: P.O. Box 2750, Attn: HPO-JW, Honolulu, HI, 96840 USA
Phones: Work: 808-543-4524
Email: david.kaneko@heco.com

Nakamoto, Ricky
Title: Sr. Supervisor Contact Type 1: Other
Address: P.O. Box 2750, Attn: WAG-VF, Honolulu, HI, 96840 USA
Phones: Work: 808-543-7806 :

On Duty Trouble Dispatcher, Ward Avenue Complex
Title: Trouble Dispatcher Contact Type 1: Emergency Contact
Address: 820 Ward Avenue, Honolulu, HI, 96814 USA
Phones: 24-hour: 808-543-7874

Choy, Michael
Title: Environmental Compliance Engineer Contact Type 1: Emergency Contact
Address: P.O. Box 2750, Attn: WAM-DA, Honolulu, HI, 96840 USA
Phones: Mobile - Cell: 349-6484

CHEMICAL DESCRIPTIONS:
[x] All chemicals in inventory are identical to last year's submission
---

CHEM NAME: DIESEL FUEL
CAS: 68476-34-6
[ ] Identical to previous year

Facility Name: Hawaiian Electric Company (HECO) - Koolau T&D Baseyard

[ ] Identical to previous year
[ ] TRADE SECRET
[x] Pure [ ] Mix [ ] Solid [x] Liquid [ ] Gas [ ] EHS
PHYSICAL & HEALTH HAZARDS:
[x] Fire [ ] Sudden Release of Pressure [ ] Reactivity [x] Immediate (acute) [x] Delayed (chronic)
INVENTORY:
Max Daily Amt code: 04 (10,000 - 99,999 pounds)
Avg Daily Amt code: 04 (10,000 - 99,999 pounds)
No. of days on-site: 365
STORAGE CODES & STORAGE LOCATIONS:
Container Type: A Pressure: 1 Temp: 4 Location: Behind building Amount: 1500 gallons
CHEMICALS IN INVENTORY STATE FIELDS: No additional chemical information is required by Hawaii

---

CHEM NAME: GASOLINE
CAS: 8006-61-9
[ ] Identical to previous year
[ ] TRADE SECRET
[x] Pure [ ] Mix [ ] Solid [x] Liquid [ ] Gas [ ] EHS
PHYSICAL & HEALTH HAZARDS:
[x] Fire [ ] Sudden Release of Pressure [ ] Reactivity [x] Immediate (acute) [x] Delayed (chronic)
INVENTORY:
Max Daily Amt code: 04 (10,000 - 99,999 pounds)
Avg Daily Amt code: 04 (10,000 - 99,999 pounds)
No. of days on-site: 365
STORAGE CODES & STORAGE LOCATIONS:
Container Type: B Pressure: 1 Temp: 4 Location: Tank behind building Amount: 2500 gallons
CHEMICALS IN INVENTORY STATE FIELDS: No additional chemical information is required by Hawaii

---

RECEIVED
'05 MAR -2 A7:18
OAHU CIVIL DEFENSE AGENCY

FACILITY STATE FIELDS:
Hawaii requests the following:
Indicate Island: Oahu

STATE / LOCAL FEES: $100

[ ] I have attached a site plan
[ ] I have attached a list of site coordinate abbreviations
[ ] I have attached a description of dikes and other safeguard measures

Certification (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in pages one through 2, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Cecily Barnes, Manager Support Services
Name and official title of owner/operator OR owner/operator's authorized representative

Cecily Barnes 2-24-05
Signature Date signed

Environmental Planning Solutions, LLC
945 Makaiwa Street
Honolulu, Hawaii 96816
Phone: 732-8602 Fax: 538-3168
Email: sakodac001@hawaii.rr.com

April 25, 2005

Honolulu Fire Department
Fire Communications Center
650 South King Street
Honolulu, HI 96813

Attention: Sheryl Nakama

Subject: Request for Records on Reported Hazardous Material Spill Events

Dear Ms. Nakama:

Environmental Planning Solutions, LLC (EPS) is engaged in a hazardous site assessment project for a property located in Kailua, Oahu, Hawaii, identified as Tax Map Key nos. 4-2-03:004 and :026. These two parcels, portions of which are being planned to contain a new access road to Kailua High School, are also known as the Hawaii Youth Correctional Facility.

The site assessment includes the identification of facilities on the site or adjacent to it which use or generate hazardous substances on their premises. It is our understanding that the Honolulu Fire Department has maintained files containing such information. We would be interested in any information regarding unauthorized hazardous material spills/releases, violations (including safety violations), or aboveground tank registrations for any facility located at or within a ¼ mile radius of the subject property. If no such records exist, a negative response would be appreciated. The information will be used in a Phase I – Environmental Site Assessment. It would be greatly appreciated if you could respond as soon as possible.

Should you have further questions, please do not hesitate to contact me at 732-8602 (office) or 223-1408 (cell).

Sincerely,
ENVIRONMENTAL PLANNING SOLUTIONS, LLC

Colette Sakoda

Colette M. Sakoda
Principal

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

3375 Koapaka Street, Suite H-425
Honolulu, Hawaii 96819-1869
Phone: (808) 831-7761 Fax: (808) 831-7750 Internet: www.honolulufire.org

MUFI HANNEMANN
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

May 3, 2005

Ms. Colette M. Sakoda
President
Environmental Planning Solutions
945 Makaiwa Street
Honolulu, Hawaii 96816

Dear Ms. Sakoda:

Subject: Hazardous Materials Incidents

A survey of our records on hazardous materials incidents has disclosed the following incidents occurred within a one-quarter mile radius of Tax Map Key Numbers 4-2-03:004 and 4-2-03:026, Kailua, Hawaii 96734:

DATE	INCIDENT	ADDRESS
02/29/96	2677	Ulupii Street/Kalanianaole Highway
10/01/98	17135	Ulupii Street/Kalanianaole Highway
04/02/02	9424	1465 Ulupii Street

Should you have any questions or want a copy of a fire report, please call Sheryl Nakama of our Fire Communication Center at 523-4854.

Sincerely,

ATTILIO K. LEONARDI
Fire Chief

AKL/EKS:sn

APPENDIX E

TRAFFIC EVALUATION

KAILUA HIGH SCHOOL

ALTERNATIVE ACCESS

Kailua, Oahu, Hawaii

June 2006

Revised October 2006

PARSONS BRINCKERHOFF

Over a Century of Engineering Excellence

TRAFFIC EVALUATION

KAILUA HIGH SCHOOL ALTERNATIVE ACCESS

Honolulu, Oahu, Hawaii

June 2006

Revised October 2006

Prepared for:
Department of Accounting and General Services
State of Hawaii
Public Works Division
1151 Punchbowl Street
Honolulu, HI 96813

Prepared by:

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower, Suite 2400
1001 Bishop Street
Honolulu, HI 96813
(808) 531-7094

PBQD Reference Number:
16425A

TABLE OF CONTENTS

I. INTRODUCTION 2

II. EXISTING LAND USE AND ROADWAY NETWORK 5

A. EXISTING LAND USE 5

B. EXISTING ROADWAY NETWORK 5

1. Kalanianaole Highway 5

2. Kailua Road 6

3. Keolu Drive 6

4. Akiohala Street 6

5. Ulupii Street 6

6. Ulumanu Drive 7

7. Old Kalanianaole Road 7

III. EXISTING TRAFFIC CONDITIONS 8

A. TRAFFIC VOLUMES 8

B. TRAFFIC OPERATIONS 9

1. Kailua Road/Ulumanu Drive Intersection 9

2. Kalanianaole Highway/Ulupii Street Intersection 13

3. Ulumanu Drive/Ulupii Street Intersection 13

4. Kalanianaole Highway/Old Kalanianaole Road Intersection 13

5. Keolu Drive/Akiohala Street Intersection 13

IV. SCHOOL-RELATED TRAFFIC CONDITIONS 14

A. WEEKDAY PEAK PERIODS 14

1. Ulumanu Main Entrance 14

2. Akiohala Drop-off Only Entrance 17

3. Summary 17

B. SPECIAL EVENTS 19

V. ALTERNATIVES ANALYSIS 20

A. DESCRIPTION OF ALTERNATIVES 20

1. Alternative 1: New Access Road and Student Parking Lot 20

2. Alternative 2: New Access Road and Student Parking Lot with Ulumanu Restriction 20

3. Alternative 3: New Student Parking Lot off Akiohala Street Access 20

4. Alternative 4: Ulumanu Drive Pedestrian Improvements 21

5. Alternative 5: Ulupii Street Pedestrian Improvements 21

6. Alternative 6: Makai "Old Kukunono" Access Road 21

7. Alternative 7: No Build 22

B. PROJECTED PEAK HOUR TRAFFIC CONDITIONS 29

C. EVALUATION OF ALTERNATIVES 38

1. Alternative 1- New Access Road and Student Parking Lot 38

2. Alternative 2- New Access Road and Student Parking Lot With Ulumanu Access Restrictions 38

3. Alternative 3 – New Student Parking Lot off Akiohala Access 39

4. Alternative 4 – Add Pedestrian Facilities to Ulumanu Drive 39

5. Alternative 5 – Add Pedestrian Facilities to Ulupii Street and Allow Right-Turns 40

6. Alternative 7 – No Build 41

7. Summary 41

VI. RECOMMENDED ALTERNATIVE 43

A. DESCRIPTION OF PROPOSED ACCESS ROAD 43

1. Alignment of Proposed Access Road 43

2. Location of Proposed Access Road Intersection on Kalanianaole Highway..... 43

B. PROPOSED ACCESS ROAD/KALANIANAOLE HIGHWAY INTERSECTION GEOMETRY 46

C. OTHER FEATURES OF THE RECOMMENDED ALTERNATIVE 47

1. Drop-off Circle Driveway Access 47

2. Proposed Parking Lot 48

VII. SUMMARY AND CONCLUSION 51

A. SUMMARY 51

B. CONCLUSION 52

TABLE OF APPENDICES

Appendix A Existing Traffic Data ..... A

Appendix B Levels of Service Definitions ..... B

Appendix C Intersection Capacity Analysis Worksheets C

Appendix D Department of Public Safety Fax Transmittal ..... D

TABLE OF FIGURES

Figure 1 Location Map 3

Figure 2 Lane Configurations 10

Figure 3 Existing Traffic Volumes 11

Figure 4 Travel Patterns - Inbound 15

Figure 5 Travel Patterns - Outbound 16

Figure 6 School-Related Traffic Volumes – AM Peak Hour 18

Figure 7 Alternative 1: New Access Road and Student Parking Lot 23

Figure 8 Alternative 2: New Access Road and Student Parking Lot With Ulumanu Access Restrictions 24

Figure 9 Alternative 3: New Student Parking Lot off Akiohala Street Access 25

Figure 10 Alternative 4: Ulumanu Drive Pedestrian Improvements 26

Figure 11 Alternative 5: Ulupii Street Pedestrian Improvements 27

Figure 12 Alternative 7: No Build 28

Figure 13 Projected School-Related Peak Hour Traffic Volumes – Alternative 1 30

Figure 14 Projected School-Related Peak Hour Traffic Volumes With Ulumanu Restriction – Alternative 2 31

Figure 15 Total Projected Peak Hour Traffic Volumes – Alternative 1 32

Figure 16 Total Projected Peak Hour Traffic Volumes – Alternative 2 33

Figure 17 Total Projected Peak Hour Traffic Volumes – Alternative 3 34

Figure 18 Total Projected Peak Hour Traffic Volumes – Alternatives 4 & 7 35

Figure 19 Total Projected Peak Hour Traffic Volumes – Alternative 5 36

Figure 20 Access Road Intersection Location Alternatives 44

Figure 21 Weekday Vehicular Parking Operations 49

Figure 22 Special Events Vehicular Parking Operations 50

LIST OF TABLES

Table 1 Summary of Existing LOS and Delay 12

Table 2 Alternatives Analysis LOS and Delay Summary 37

Table 3 Summary Evaluation Matrix 42

Table 4 Intersection Sight Distance Evaluation Northbound Kalanianaole Highway Left-turn Out of Proposed Access Road 45

Table 5 Intersection Sight Distance Evaluation Southbound Kalanianaole Highway Left-turn Out of Proposed Access Road 46

Table 6 Peak Hour Intersection Level of Service Proposed Access Road Location Alternatives 47

I. INTRODUCTION

The main access to Kailua High School (KHS) is located so that the majority of school-related traffic must pass through the Pohakupu residential subdivision to and from the school. Two Pohakupu neighborhood streets most affected by this traffic are Ulumanu Drive and Ulupii Street. During special events at KHS, there is often insufficient parking on campus, and overflow parking also affects the Pohakupu neighborhood. Figure 1 illustrates the location of Kailua High School and the surrounding uses.

Residents of Pohakupu subdivision have requested that alternative access options be explored that could minimize the use of their neighborhood streets to access KHS.

The State of Hawaii implemented a secondary, drop-off only access several years ago to address these concerns. This access involved the extension of Akiohala Street in the Enchanted Lake subdivision to KHS. While this action helped to serve approximately 30 to 35 percent of the school-related traffic, residents of Pohakupu neighborhood still feel that the remaining school-related traffic passing through their subdivision is still too high.

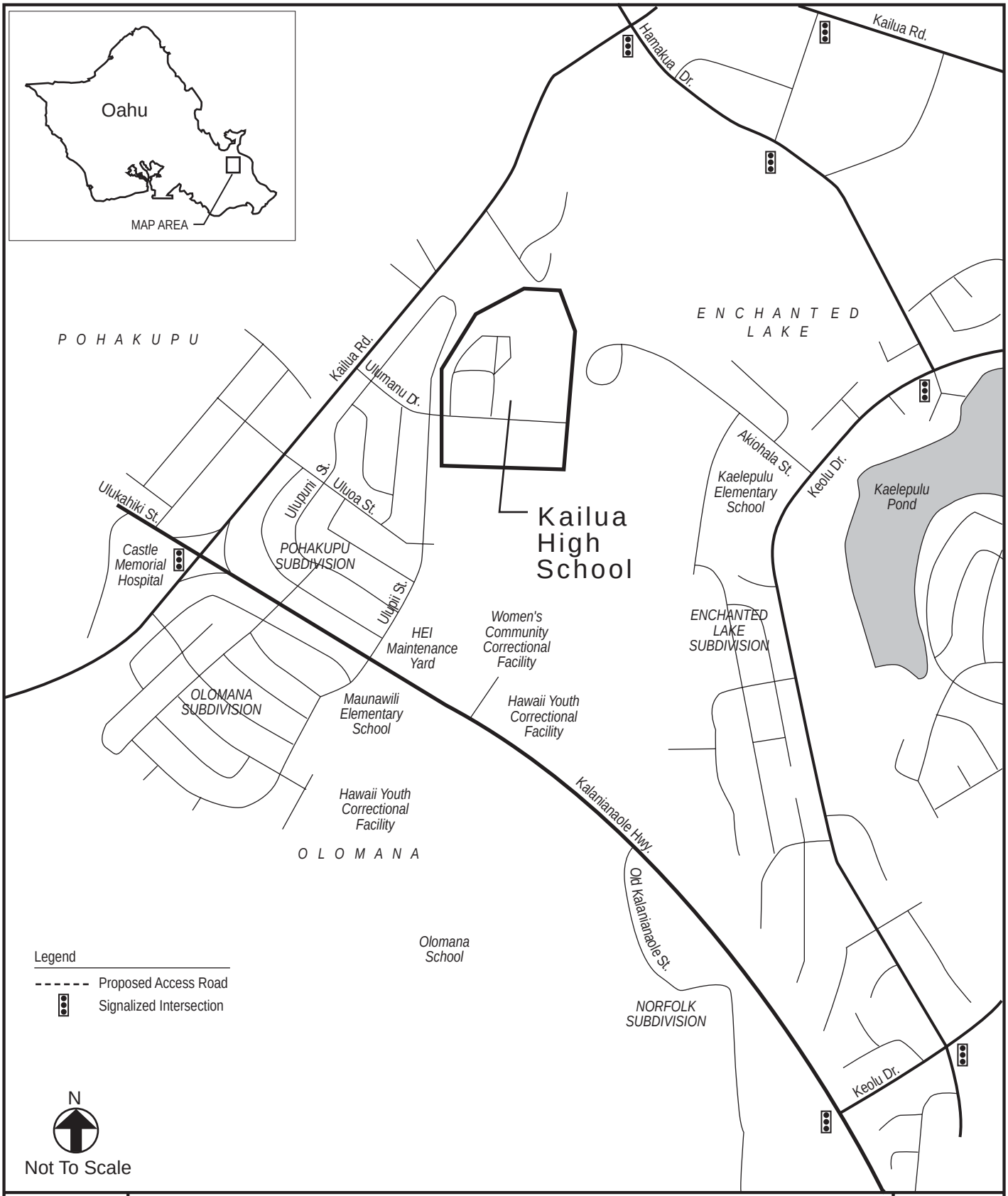
In response, the City and County of Honolulu worked to limit school-related traffic to only Ulumanu Drive by prohibiting right turns onto Ulupii Street from northbound (town-bound) Kalanianaole Highway during the morning peak period. To address the issue of school traffic parking in the neighborhood, parking was prohibited on neighborhood streets during normal school hours. However, school-related traffic during normal school days and parking overflow problems during special events on campus still remain issues for residents in this area.

Because of these outstanding issues, this study was commissioned by the State of Hawaii Department of Accounting and General Services (DAGS) to investigate alternative access to Kailua High School. This study has two major goals:

1. reduce school-related traffic in the Pohakupu neighborhood;
2. reduce school-related overflow parking in the Pohakupu neighborhood;

In achieving these two goals, the following considerations are important::

- maintain or improve student pedestrian safety;
- maintain or improve peak period intersection operations at key school-related intersections.



Location Map

Figure 1

This report documents data collected and summarizes the results of an evaluation of the need for an additional access to Kailua High School. Investigations regarding physical and operational alternatives and parking issues surrounding special events are also documented.

II. EXISTING LAND USE AND ROADWAY NETWORK

A. Existing Land Use

Properties near Kailua High School are mostly residential dwellings. The school is surrounded by the Pohakupu and Enchanted Lake subdivisions. Other adjacent uses include the Women's Community Correctional Center (WCCC) and Hawaii State Youth Correctional Facility (HSYCF) along Kalanianaole Highway. Commercial uses in the vicinity of Kailua High School include a Tesoro gas station near Ulumanu Drive and Kailua Road, and a neighborhood retail center on the corner of Uluoa Street and Kailua Road. There is also a Hawaiian Electric Company (HECO) truck yard on the corner of Kalanianaole Highway and Ulupii Street. Figure 1 illustrates the surrounding land uses in the vicinity of Kailua High School.

B. Existing Roadway Network

Currently there are two accesses to Kailua High School: the main entrance at the intersection of Ulumanu Drive and Ulupii Street and a drop-off only access via Akiohala Street. The main Ulumanu access is utilized by 65 to 70 percent of the school-related traffic during the peak periods. Figure 1 shows key roadways and intersections in the vicinity of Kailua High School being analyzed for this study.

These roadways in the vicinity of Kailua High School are described below.

1. Kalanianaole Highway

Kalanianaole Highway is an arterial roadway that extends from Castle Junction (Pali Highway and Kamehameha Highway) on the windward side to the H-1 Freeway eastern terminus in Honolulu. Kalanianaole Highway is a divided, four–lane roadway from Castle Junction to its intersection with Kailua Road near the Castle Medical Center. Here, the Kalanianaole Highway alignment turns south toward Waimanalo, maintaining a divided, four-lane cross-section to the vicinity of Olomana Golf Course where it narrows to an undivided, two–lane roadway. Speed limit along Kalanianaole Highway in the study area varies from 25 miles per hour (mph) to 45 mph. In the immediate vicinity of Kailua High School, the speed limit is 35 mph from Castle Medical Center to the Women's Community

Correctional Center (WCCC) and then increases to 45 mph from WCCC to the Olomana Golf Course driveway.

2. Kailua Road

At Castle Medical Center, where Kalanianaole Highway turns south towards Waimanalo, Kailua Road continues into Kailua Town. Kailua Road is a minor arterial that serves as the main western access to Kailua Town. Near Kailua High School, Kailua Road is four lanes with a raised median and has posted speed limits of 35 mph and a school zone speed limit 25 mph.

3. Keolu Drive

In the Enchanted Lake subdivision, Keolu Drive is a 4-lane collector road with a painted median that accommodates exclusive left-turn lanes at selected intersections. The painted median also serves as a refuge for vehicles turning left into individual driveways. Speed limit along Keolu Drive is 25 mph.

4. Akiohala Street

Akiohala Street is a two-lane collector which provides access to residential areas in Enchanted Lake subdivision and to Kailua High School from Keolu Drive. Its posted speed limit is 25 mph.

5. Ulupii Street

Ulupii Street provides access to the Pohakupu Neighborhood from Kalanianaole Highway. It is also a route to Kailua High School's main entrance. It is a two-lane local road that extends from Kalanianaole Highway to Ulumanu Drive. Posted speed limit on Ulupii Street is 25 mph. Homes along Ulupii Street have direct driveway access. Parking is prohibited on Ulupii Street between 7:00AM and 3:30PM on school days. Vehicles traveling northbound on Kalanianaole Highway are prohibited from turning right onto Ulupii Street from 6:00-8:30AM. Northbound drivers are also prohibited from turning left into the Olomana subdivision on the mauka side of Kalanianaole Highway from 6:00-7:15AM.

6. Ulumanu Drive

Ulumanu Drive provides access to the Pohakupu Neighborhood from Kailua Road. It is the primary route to the Kailua High School main entrance. It is a two-lane local road that originates at Kailua Road and extends to Ulupii Street where it enters into the Kailua High School driveway.

7. Old Kalanianaole Road

Old Kalanianaole Road is a two-lane local road that provides access to the Norfolk residential area as well as state-owned land. There is a City and County of Honolulu base yard on the corner of Kalanianaole Highway and Old Kalanianaole Road. After meandering along the eastern base of Mount Olomana, Old Kalanianaole Road reconnects with Kalanianaole Highway just north of the Olomana Golf Course.

III. EXISTING TRAFFIC CONDITIONS

A. Traffic Volumes

Existing traffic turning movement counts were conducted April 27-28, 2005 at five unsignalized intersections in the vicinity of Kailua High School: Ulumanu Drive/Kailua Road, Ulumanu Drive/Ulupii Street, Ulupii Street/Kalanianaole Highway, Kalanianaole Highway/Old Kalanianaole Road, and Akiohala Street/Keolu Drive. Figure 2 illustrates the lane configurations for these intersections. Automatic Traffic Recorders were set up on Kalanianaole Highway near the Women's Community Correctional Facility, on Keolu Drive immediately east of Akiohala Street, and on Kailua Road between Uluoa Street and Ulumanu Drive. These counts were used to supplement manual turning movement counts. Based on these counts, the AM and mid-afternoon PM peak hours were found to be 7:15-8:15AM and 1:45-2:45PM, respectively. These peak hours coincided with the start and end of the school day at Kailua High School.

During the morning peak, 299 vehicles per hour (vph) entered and 161 vph exited the main (Ulupii/Ulumanu) Kailua High School access. 109 vph entered and 109 vph exited the back (Akiohala) access during that time. During the afternoon peak, 101 vph entered and 216 vph exited the main access, and 77 vph entered and 77 vph exited the back access. A summary of existing traffic volumes is shown in Figure 3.

Traffic volumes on Ulumanu Drive during the morning peak totaled 305 vehicles per hour (vph) inbound with 225 vph destined for KHS. Outbound traffic during this time period totaled 144 vph with 114 vph originating from KHS. During the afternoon peak, inbound traffic on Ulumanu Drive totaled 103 vph with 67 vph destined for KHS, while outbound traffic totaled 163 vph with 133 vph originating from KHS.

Inbound traffic on Ulupii Street during the morning peak totaled 155 vph with 74 vph destined for KHS. There were 96 vph turning right into Ulupii Street from northbound Kalanianaole Highway despite the posted right-turn prohibition. Outbound traffic on Ulupii Street during the morning peak totaled 125 vph with 45 vph originating from KHS. During the afternoon peak, inbound traffic on Ulupii Street totaled 72 vph with 34 vph destined to KHS. Outbound traffic totaled 96 vph with 82 vph originating from KHS.

Based on these observations, it is concluded that KHS traffic comprises a significant proportion of the traffic on Ulumanu Drive and Ulupii Street during the morning and afternoon KHS traffic peak periods.

Because the main Kailua High School entrance is embedded within the Pohakupu neighborhood, there are noticeably high volumes of student pedestrians walking in and out of the school on residential roadways during these peaks.

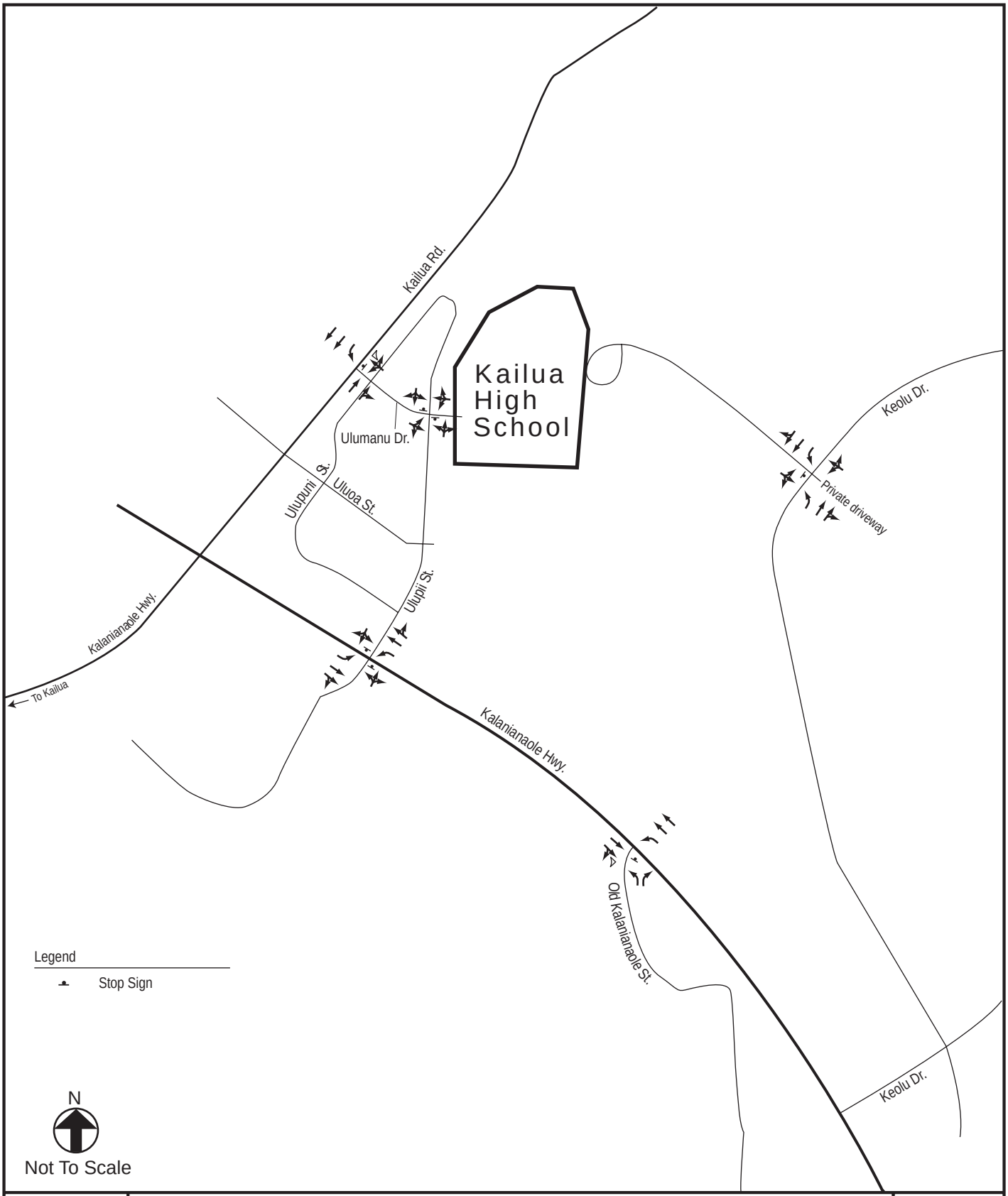
B. Traffic Operations

The intersections discussed in this evaluation were analyzed using the methodologies for unsignalized intersections documented in the 2000 Highway Capacity Manual (HCM). Operating conditions at an intersection are expressed in delay (seconds per vehicle) and Level-of-Service (LOS) letters A through F, LOS A representing operating conditions with low delays and LOS F representing operating conditions with high delay. A more detailed description of Level-of-Service can be found in Appendix B.

Table 1 summarizes peak hour LOS and delay for the five intersections included in this evaluation.

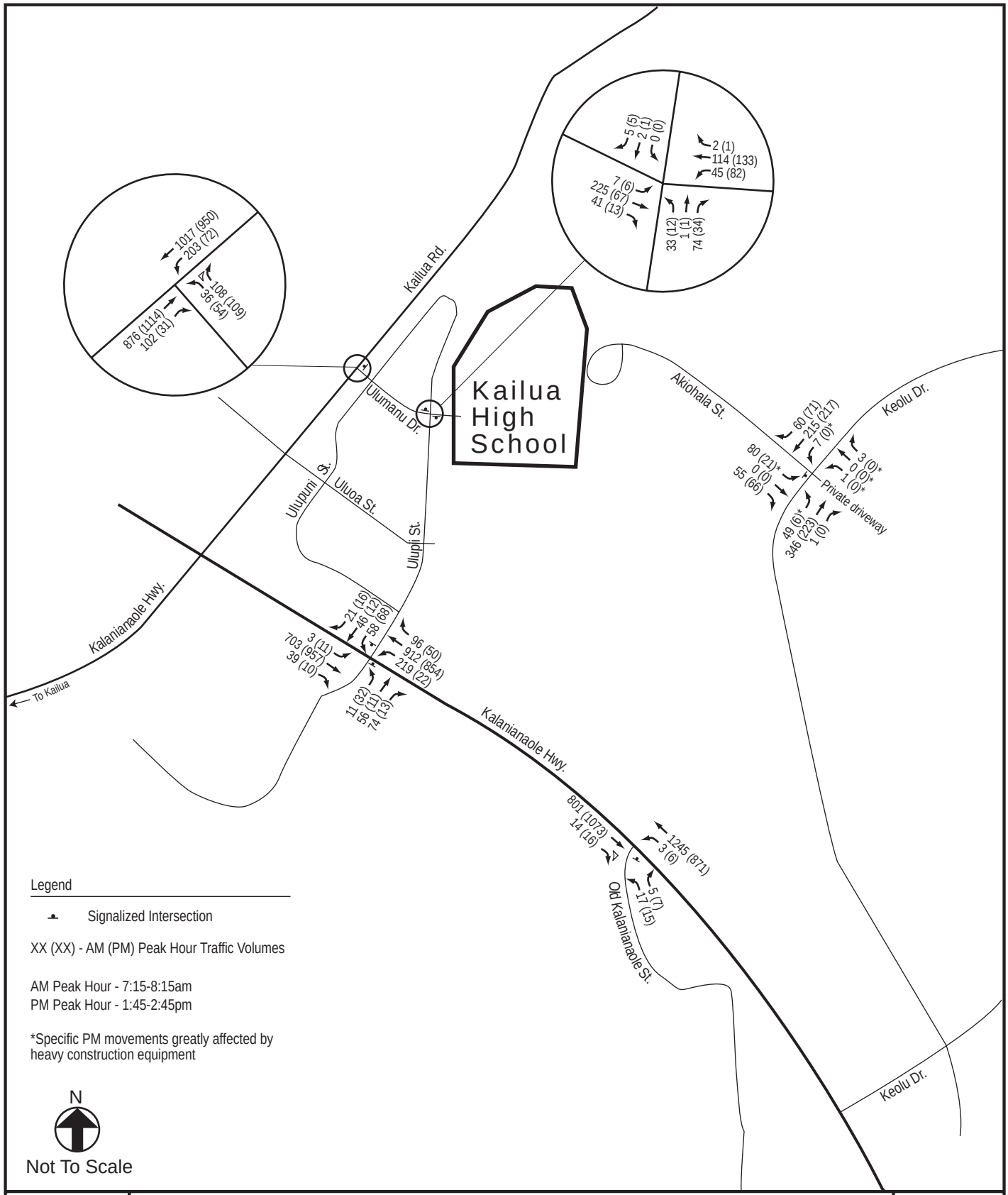
1. Kailua Road/Ulumanu Drive Intersection

Kailua Road traffic is heavier in the Honolulu-bound direction in the morning and heavier in the Kailua-bound in the afternoon. Traffic along Kailua Road and Kalanianaole Highway is congested in the Honolulu-town bound direction during the AM peak hour of 7:15-8:15AM. The Honolulu-bound queue from the Kalanianaole Highway/Kailua Road/Ulukahiki Street intersection (Castle Medical Center) extended past Ulumanu Drive. As a result, vehicles attempting to turn left out of Ulumanu Drive onto Kailua Road experienced high delays, particularly in the morning. This movement operated in LOS E in the morning peak and LOS D in the afternoon peak. Honolulu-bound (westbound) vehicles turning left onto Ulumanu Drive from Kailua Road, and vehicles turning right out of Ulumanu Drive operate well with LOS B and C during the morning and afternoon peak hours. On weekdays, Ulumanu Drive experiences heavy student pedestrian traffic before and after school.



Lane Configurations at Intersections Studied

Figure 2



Existing Traffic Volumes

Figure 3

Table 1 Summary of Existing LOS and Delay

Intersection	Existing Traffic			
	AM Peak		PM Peak	
	LOS	Delay	LOS	Delay
Ulumanu Dr/ Kailua Rd	**Unsignalized**		**Unsignalized**	
WB Kailua Rd Left	B	12.0	B	11.6
NB Ulumanu Left	E	37.8	D	32.5
NB Ulumanu Right	B	13.5	C	15.0
Ulumanu Dr/ Ulupii St	**Unsignalized**		**Unsignalized**	
NB KHS Left/Through/Right	A	7.8	A	7.5
SB Ulumanu Left/Through/Right	A	7.4	A	7.5
WB Uluopihi Left/Through/Right	B	10.1	A	9.8
EB Ulupii Left/Through/Right	B	11.5	A	9.7
Ulupii St/ Kalanianaole Hwy	**Unsignalized**		**Unsignalized**	
NB Kalanianaole Left	B	10.5	B	10.2
SB Kalanianaole Left	B	10.2	A	9.8
WB Ulupii Left/Through/Right	F	147.6	D	26.2
EB Ulupii Left/Through/Right	E	44.2	C	22.3
Kalanianaole Hwy/ Old Kalanianaole Rd	**Unsignalized**		**Unsignalized**	
NB Kalanianaole Left	A	9.4	B	10.6
EB Old Kalanianaole Left	C	19.8	C	22.5
EB Old Kalanianaole Right	B	11.1	B	12.5
Akiohala St/ Keolu Dr	**Unsignalized**		**Unsignalized**	
NB Driveway Left/Through/Right	B	11.6	B	11.1
SB Akiohala Left/Through/Right	B	14.0	B	10.7
WB Keolu Left/Through/Right	A	8.0	A	7.7
EB Keolu Left/Through/Right	A	7.9	A	7.8

Note: NB=northbound, SB=southbound, EB=eastbound, WB=westbound, KHS=Kailua High School, Delay in seconds per vehicle

2. Kalanianaole Highway/Ulupii Street Intersection

Queuing from the Kalanianaole Highway/Kailua Road/Ulukahiki Street intersection was also observed on the Waimanalo leg of Kalanianaole Highway past Ulupii Street, almost to the Women's Community Correctional Facility. During off-peak time periods, vehicles turning out of Ulupii Street were observed experience relatively little delay. However, during the morning peak period, the traffic queue on Honolulu-bound Kalanianaole Highway make it difficult for these vehicles to complete their movements. The westbound approach operates with LOS F during the morning peak and LOS D during the afternoon. The eastbound approach operates during the morning and afternoon peaks with LOS E and C, respectively.

3. Ulumanu Drive/Ulupii Street Intersection

All approaches at Ulumanu Drive and Ulupii Street operate at LOS A for both peak hours evaluated.

4. Kalanianaole Highway/Old Kalanianaole Road Intersection

The eastbound left-turn movement experiences some delay during the morning and afternoon peak due to heavy through volumes on Kalanianaole Highway, but still operates well at LOS C.

5. Keolu Drive/Akiohala Street Intersection

Data collection at the Keolu Drive/Akiohala Street intersection was affected by sewer line construction equipment along the median of Keolu Drive. Construction took place between 8:30AM and 6:00PM on both days of data collection. Keolu Drive was narrowed to one lane in each direction from Akiohala Street to Hamakua Street. Still, this intersection operated well at LOS C or better even under constrained construction conditions and would operate better when construction closures were removed.

IV. SCHOOL-RELATED TRAFFIC CONDITIONS

A. Weekday Peak Periods

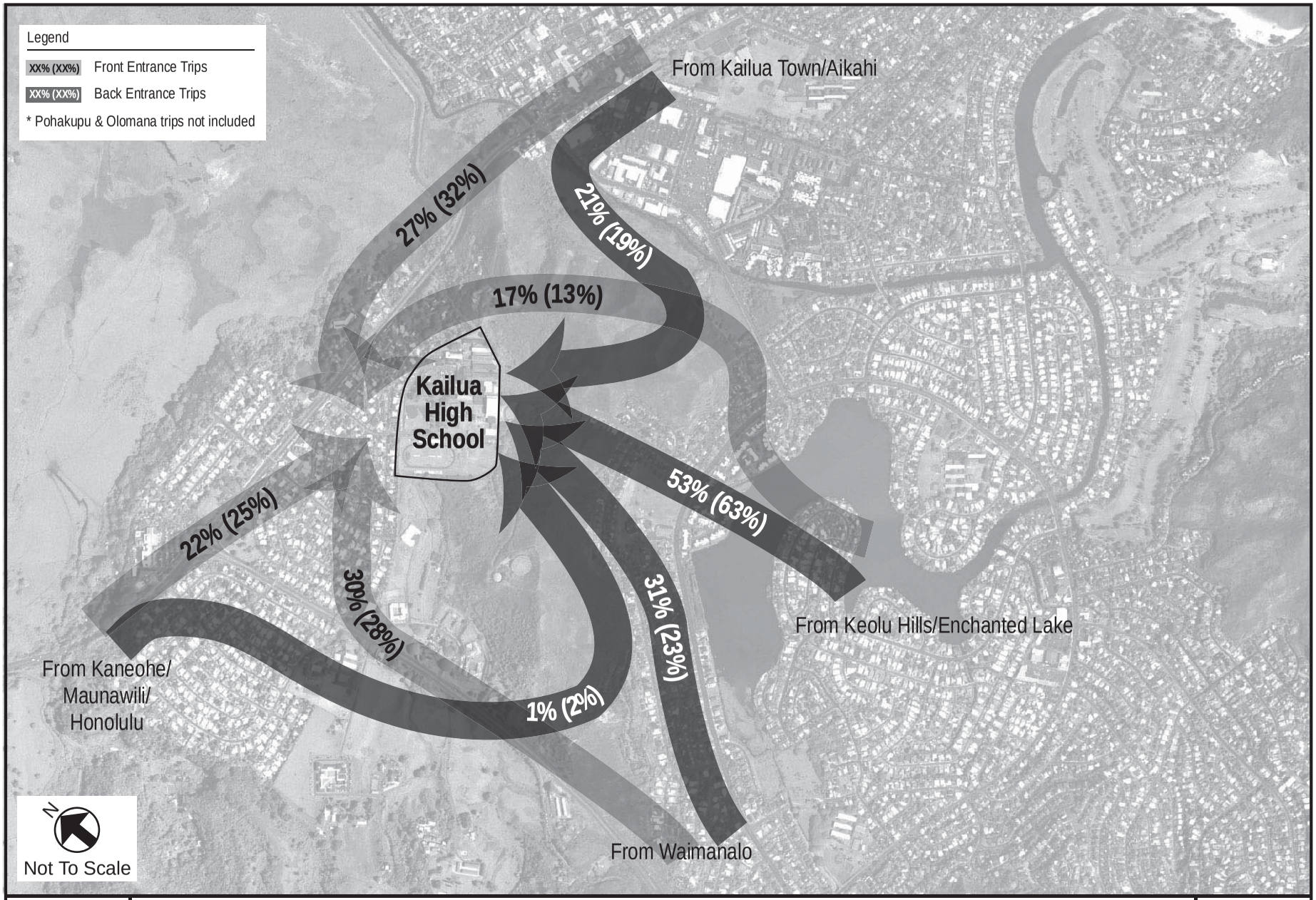
Travel surveys were conducted concurrently with the traffic counts on April 27-28, 2005. Motorists entering the school were asked two questions, "Where did you come from?" and "Where are you going?" If the driver being surveyed was parking or leaving a parking lot such as a staff member or student, questions were modified to "Before school, where did you come from?" and "After school, where do you plan to go?" Surveyors coded the responses into several regional categories: Downtown, Maunawili, Kaneohe, Kailua Town, Enchanted Lake/Keolu Hills, Waimanalo, Olomana (via Ulupii Street), or Pohakupu.

The responses were then summarized by roadway utilized and direction. There were a total of 575 valid observations recorded in the survey. Of the 575 observations, 418 were recorded at the front/main entrance and 157 at the back entrance of the school. Figures 4 and 5 depict observed inbound and outbound trips, respectively. These data did show certain time specific trends such as parents dropping of their children on the way to work in the morning and students returning home after school.

1. Ulumanu Main Entrance

During the AM peak period, 30% of the total inbound drivers surveyed were from Waimanalo while the next largest group, 27%, was from Kailua town. Outbound statistics showed that the most drivers surveyed, 29% of the total, was headed toward Honolulu. The second largest group was headed for Kailua town. These distributions appear to indicate that during the morning peak, many parents are dropping students off at school before heading to work in Honolulu.

Because the mid-afternoon peak coincides with the end of school day which is 1:45pm, there were fewer trips connected with Honolulu since this peak occurred before the end of the work day. Most of the inbound and outbound trips were from/to Kailua town and Waimanalo. During this time period, about 34% and 28% of the trips were headed for Kailua town and Waimanalo, respectively.



Travel Patterns - Inbound

Figure 4

Travel Patterns - Outbound

Figure 5

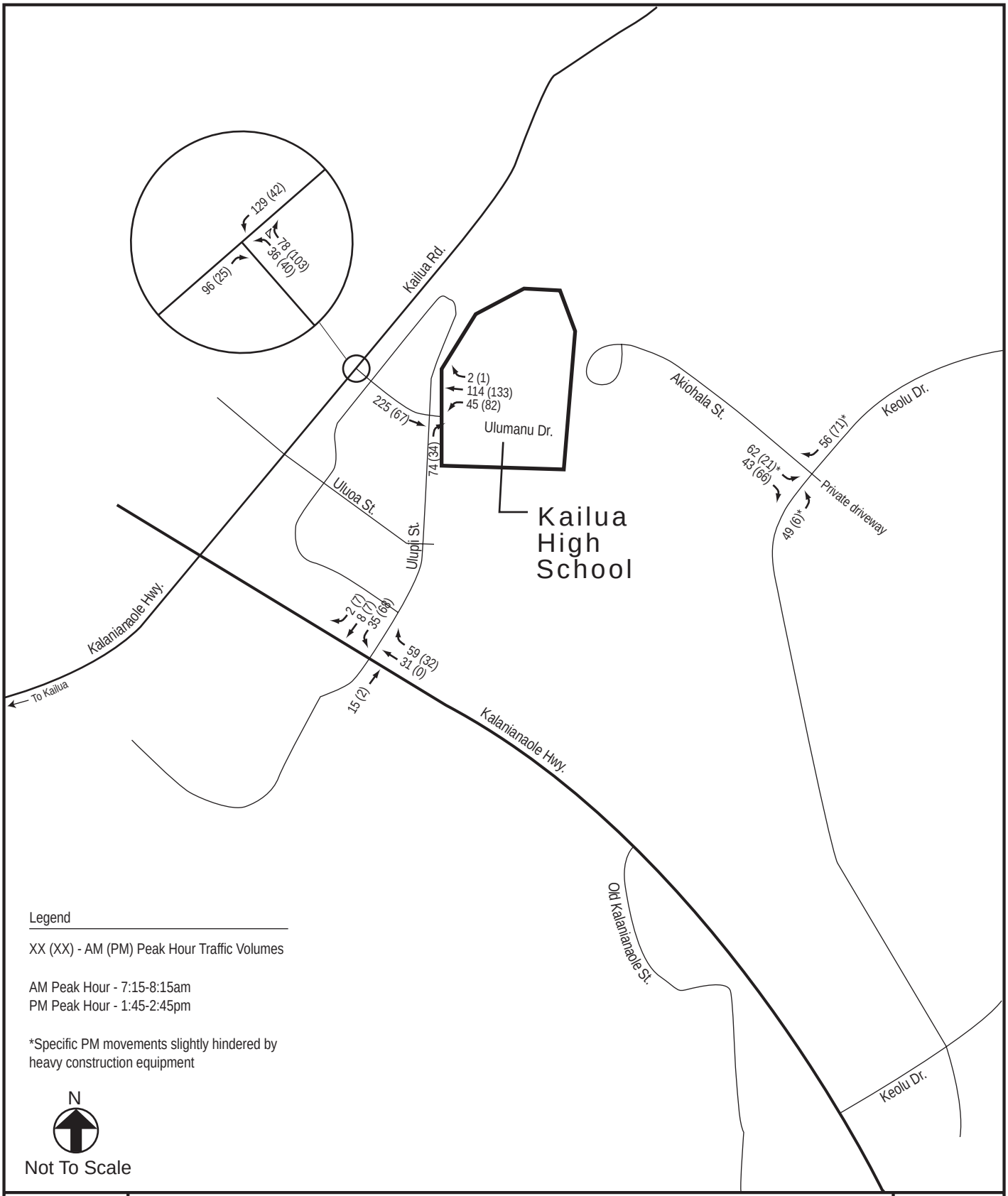
2. Akiohala Drop-off Only Entrance

In the back entrance, most of the drivers surveyed originated from and were headed to Keolu Hills/Enchanted Lake and Waimanalo. During the morning peak, Keolu Hills/Enchanted Lake trips represented 53% and 47% of the total inbound and outbound traffic, respectively. Waimanalo trips were second largest at 31% and 25% of total inbound and outbound trips. Similarly, Keolu Hills/Enchanted lake trips represented 63% and 58% of the total inbound and outbound trips during the afternoon peak. Waimanalo trips comprised 23% and 17% of the total inbound and outbound trips. Kailua trips comprised 19% of both inbound and outbound trips. On both days of the survey, there were no trips observed to or from Olomana and Pohakupu at the back entrance.

3. Summary

Using origin and destination ratios obtained from travel survey data, school-related traffic volumes were extracted from the existing surrounding traffic volumes. (Figure 6) The effect of the congested Kalanianaole Highway/Kailua Road/Ulukahiki Street intersection during the morning peak is noticeable in the comparison between school-related traffic and surrounding traffic. Around 15 vehicles heading Honolulu-bound on Kailua Road were observed making U-turns at Ulumanu Drive because of heavy queuing. Around 40 vehicles originating from Kailua Town cut through Pohakupu heading for Waimanalo and Olomana. Also, about 35 vehicles from the Waimanalo/Olomana direction cut through Pohakupu on their way to Kailua Town.

Ulumanu Drive experienced around 225 inbound school-related vehicles and 114 outbound vehicles during the morning peak hour. Ulupii Street experienced around 74 and 45 inbound and outbound vehicles, respectively. During the afternoon KHS peak, Ulumanu Drive experienced around 67 inbound school-related vehicles and 133 outbound vehicles. Ulupii Street experienced around 34 and 82 inbound and outbound vehicles, respectively. These volumes represent traffic in weekday conditions.



School-Related Traffic Volumes

Figure 6

B. Special Events

Traffic activity generated by special events such as Graduation and football games is observed to be much greater than typical weekday traffic. During the 2004-2005 football season there were seven games hosted by Kailua High School. Five games were on Friday nights and two games were on Saturday nights. Since Kalaheo High School does not have their own lit football field, home games have always been played at Kailua High School. The last two seasons were especially busy for Kailua High School because Castle High School also used their field due to bleacher renovations.

Kailua High School has 270 marked parking stalls. For special events, the campus can accommodate around 400 vehicles by allowing parking along curbs and on certain grassy areas. When parking is filled during large events such as Kahuku vs. Kailua games and Graduation, parking overflows into the Pohakupu neighborhood. This causes increased traffic in the area as attendees scour the neighborhood for available parking and proceed home after the event ends. Attendees have been observed to park as far as the Ulupii Street and Kalanianaole Highway intersection. Events that caused overflow conditions were observed by school officials 2-3 times in the past year.

V. ALTERNATIVES ANALYSIS

Seven alternatives were considered for this project. The following sections discuss these alternatives, their traffic impact, and a recommended alternative. Figures 7 through 12 illustrate each of these alternatives excluding Alternative 6 which was screened out previously.

A. Description of Alternatives

1. Alternative 1: New Access Road and Student Parking Lot

This alternative proposes a new access road connecting Kalanianaole Highway to the south side of Kailua High School (KHS), near the athletic fields. A new parking lot is also proposed in this alternative, and it would be accessed only through the proposed access road. Regular access will not be provided into the KHS campus from the new access road. Provisions to allow access into the campus from the new access road would be provided, but would be closed to traffic during normal operations.

The proposed new access road will not connect to Akiohala Street. Akiohala Street will remain a drop off only access. The Ulumanu main access will remain open. The Ulupii Street right-turn prohibition is proposed to remain and would be aggressively enforced.

To accommodate special events, the proposed new access road would be able to serve as access into the KHS campus through an access that would normally be gated to prevent vehicular traffic from traveling through the KHS campus during normal school hours.

2. Alternative 2: New Access Road and Student Parking Lot with Ulumanu Restriction

This alternative is identical to Alternative 1 except that the Ulumanu main access will be restricted to faculty, staff, and delivery vehicles during peak school hours. Students who drive to KHS and student drop-offs that currently use the Ulumanu main access would use the new access road and parking lot.

3. Alternative 3: New Student Parking Lot off Akiohala Street Access

For this alternative, a new parking lot connected to the existing Akiohala Street drop off is proposed in an area just south of the KHS campus. By adding a parking lot to the existing Akiohala drop off, this alternative provides students and faculty that drive to KHS an

alternative access to KHS. The parking lot will not allow vehicular access into the KHS campus, thereby precluding vehicles from driving through campus. The Ulumanu access will remain open for student drop offs and parking, staff parking, and deliveries. The Ulupii Street right-turn prohibition during the morning peak period would continue to be enforced.

During special events for events such as graduation and athletic games, this proposed parking lot could be used to supplement the amount of parking on the KHS campus.

4. Alternative 4: Ulumanu Drive Pedestrian Improvements

The purpose of this alternative is to reduce the potential for vehicular-pedestrian conflicts on Ulumanu Drive by providing separate pedestrian facilities such as at-grade sidewalks. Before and after school, Ulumanu Drive experiences significant student pedestrian activity. Most of the time, students walk on the grass shoulders, but when it is raining or when there are higher volumes of pedestrian traffic, students were observed walking in the road.

In this alternative, vehicular access and parking will remain the same as existing conditions. The Ulupii Street right-turn restriction would remain and be enforced.

5. Alternative 5: Ulupii Street Pedestrian Improvements

This alternative is similar to Alternative 4 except the pedestrian facilities are proposed on Ulupii Street. This street also is used by student pedestrians as an access route to KHS although fewer than on Ulumanu Drive. A major difference from Alternative 4 is that the current prohibition on right-turns from northbound Kalanianaole Highway into Ulupii Street during the morning peak period is proposed to be removed.

The premise is that the proposed pedestrian facilities would decrease pedestrian-vehicle conflicts to a level that would allow the removal of the right-turn prohibition.

Vehicular access and parking will remain the same as existing conditions.

6. Alternative 6: Makai "Old Kukunono" Access Road

This alternative proposed a new access road through the existing "Old Kukunono" subdivision and was eliminated due to environmental impacts. This alternative was not evaluated as part of this analysis.

7. Alternative 7: No Build

Within the No Build Alternative, traffic operation will remain the same as in existing conditions and Alternative 4. The right-turn restriction during the morning peak at Ulupii Street and Kalanianaole Highway will also be enforced.

Alternative 1: New Access Road and Student Parking Lot

Figure 7

Alternative 2: New Access Road and Student Parking Lot
With Ulumanu Access Restrictions

Figure 8

Alternative 3: New Student Parking Lot off Akiohala Street Access

Figure 9

Alternative 4: Ulumanu Drive Pedestrian Improvements

Figure 10

Alternative 5: Ulupii Street Pedestrian Improvements

Figure 11

Alternative 7: No-Build

Figure 12

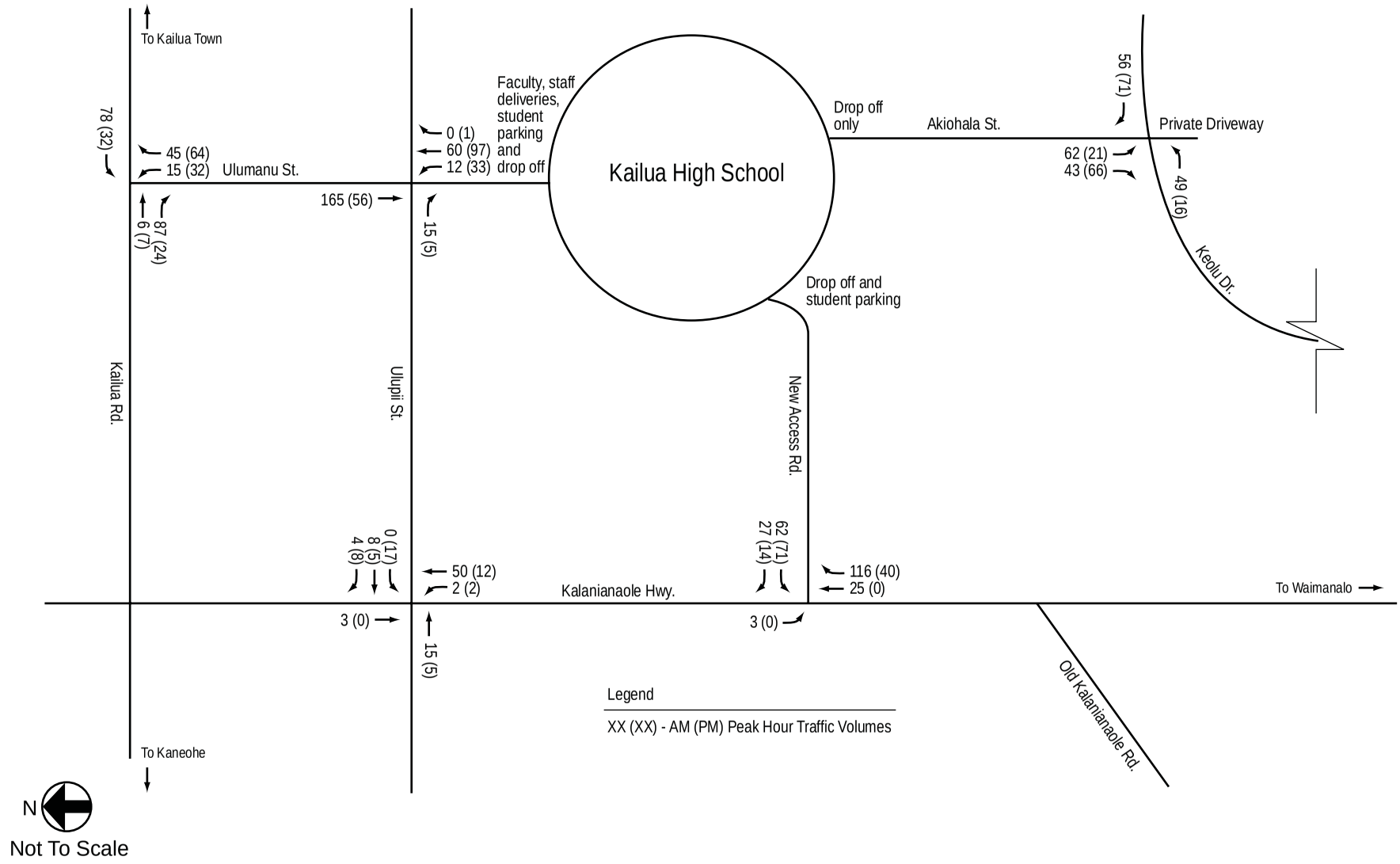
B. Projected Peak Hour Traffic Conditions

School-related traffic volumes were assigned according to each alternative scenario based on assumptions mentioned in the previous sections. The most significant change in traffic patterns from existing conditions is in Alternative 1 and 2. Figures 13 and 14 show the projected school-related traffic assignment for Alternatives 1 and 2, respectively. The other alternatives resulted in only minor traffic assignment changes from the existing condition.

School-related traffic volumes were combined with existing non-school traffic to make total projected traffic volumes for the intersections included in the study. These total projected volumes represent individual peak hour traffic conditions for each of the alternatives. The peak hours are consistent with what was used for existing conditions analyses, the beginning and end of the school day. Due to meetings and afterschool programs, it was assumed that faculty and staff did not leave the campus until after the study PM peak hour, but that the majority of students would leave during the study peak hour.

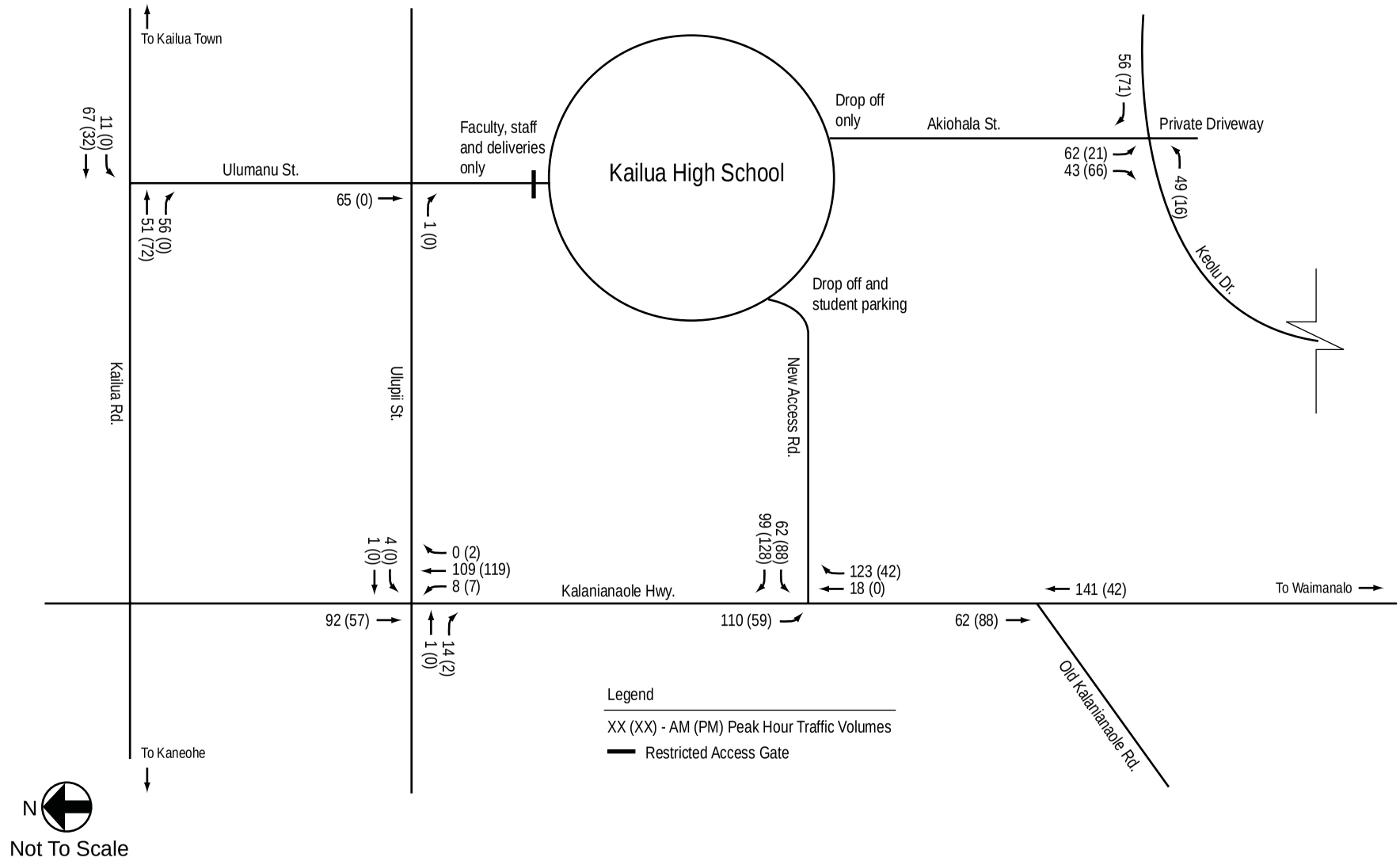
The Ulupii Street right-turn prohibition during the morning peak hour was assumed to be enforced by police officer or community patrol such that no vehicles were allowed to turn into Ulupii Street from northbound Kalanianaole Highway. This was assumed for Alternatives 1, 2, 3, 4 and 7. This right-turn movement was allowed in Alternative 5. Figures 15 through 19 illustrate the total peak hour traffic conditions for each of alternatives.

The intersections in each alternative were analyzed with HCS and summarized in Table 2. These results will be discussed in the following section.



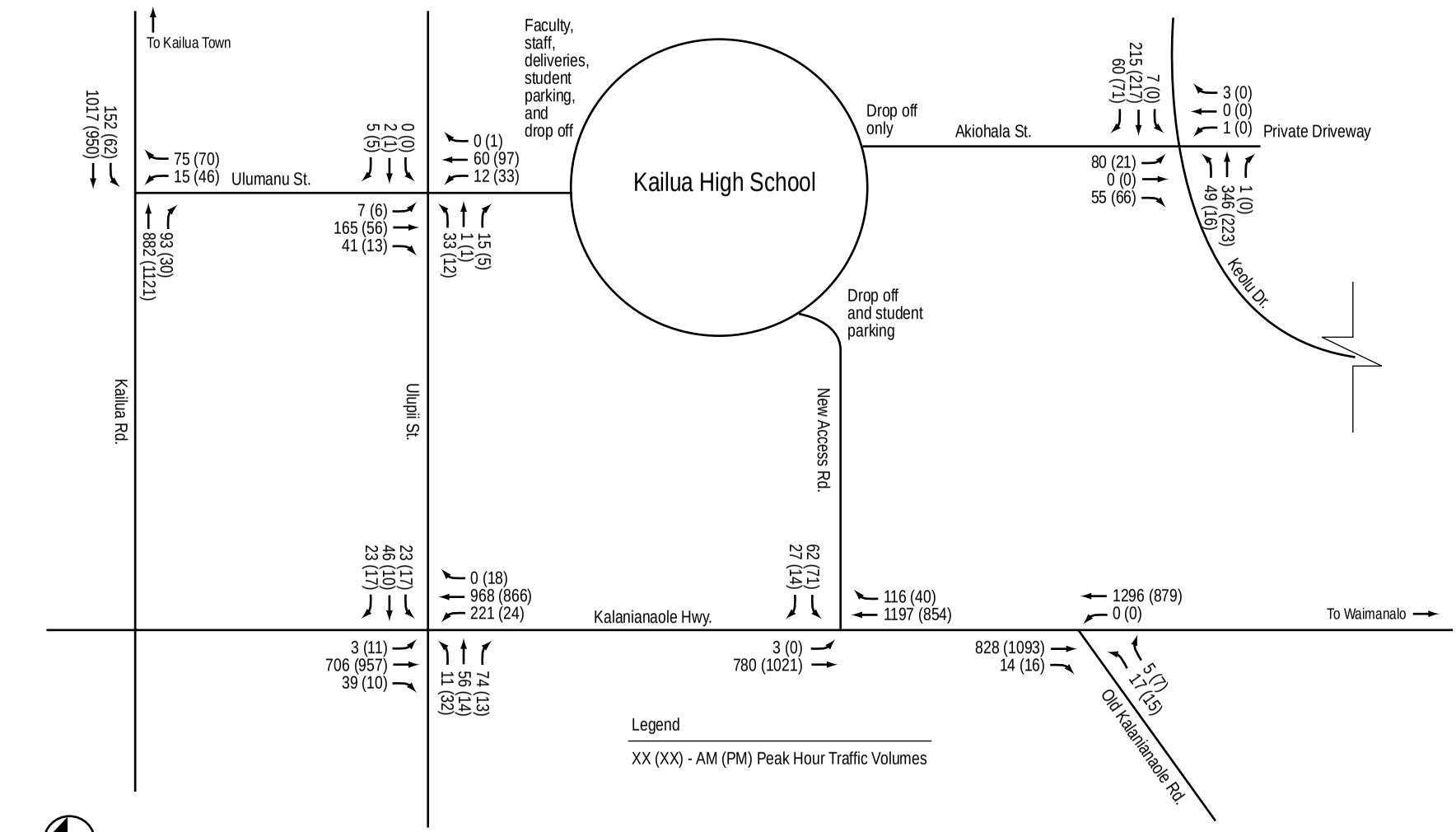
Projected School-Related Peak Hour Traffic Volumes - Alternative 1

Figure 13



Projected School-Related Peak Hour Traffic Volumes with Ulumanu Restriction - Alternative 2

Figure 14

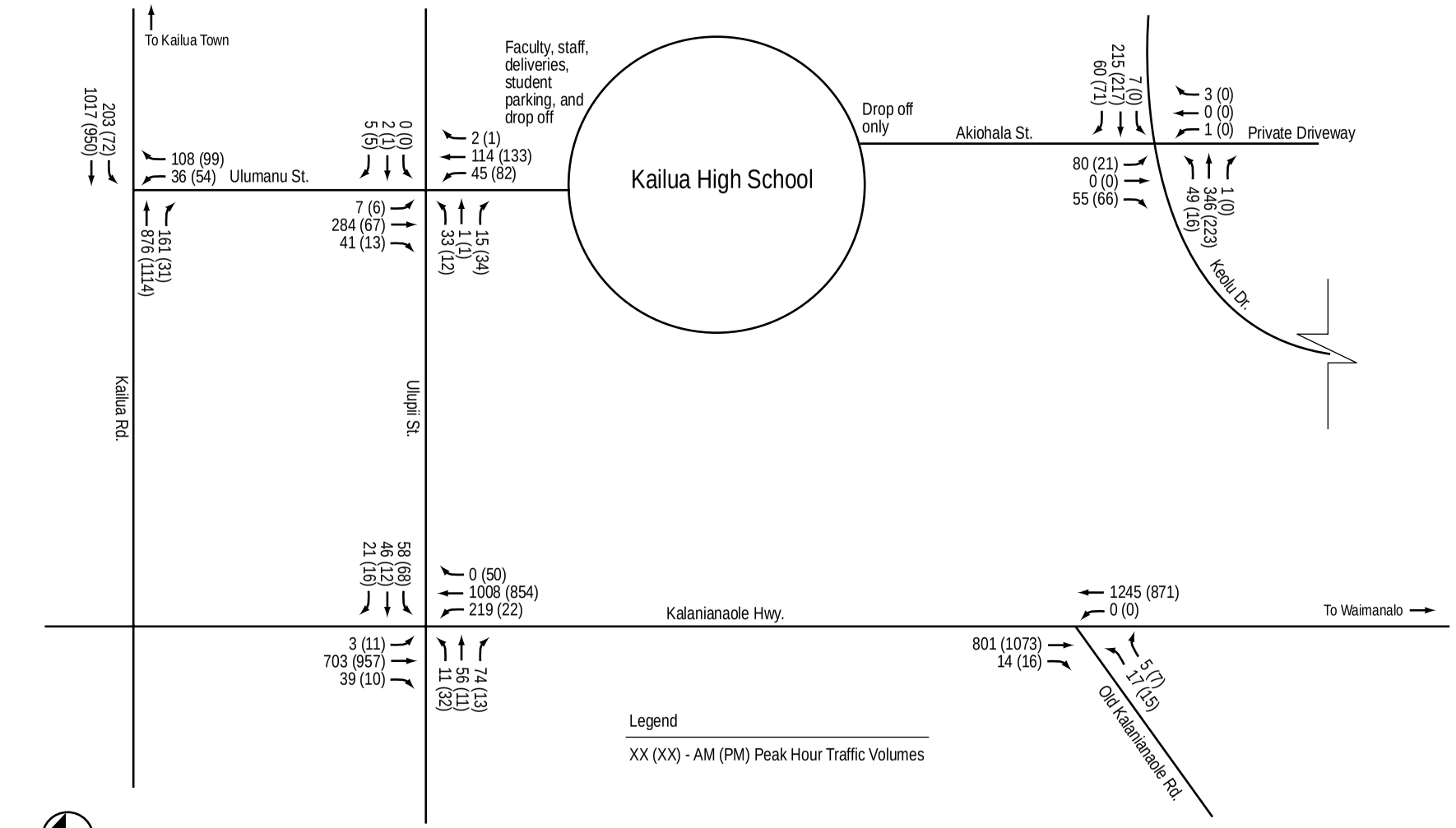


Total Projected Peak Hour Traffic Volumes - Alternative 1

Figure 15

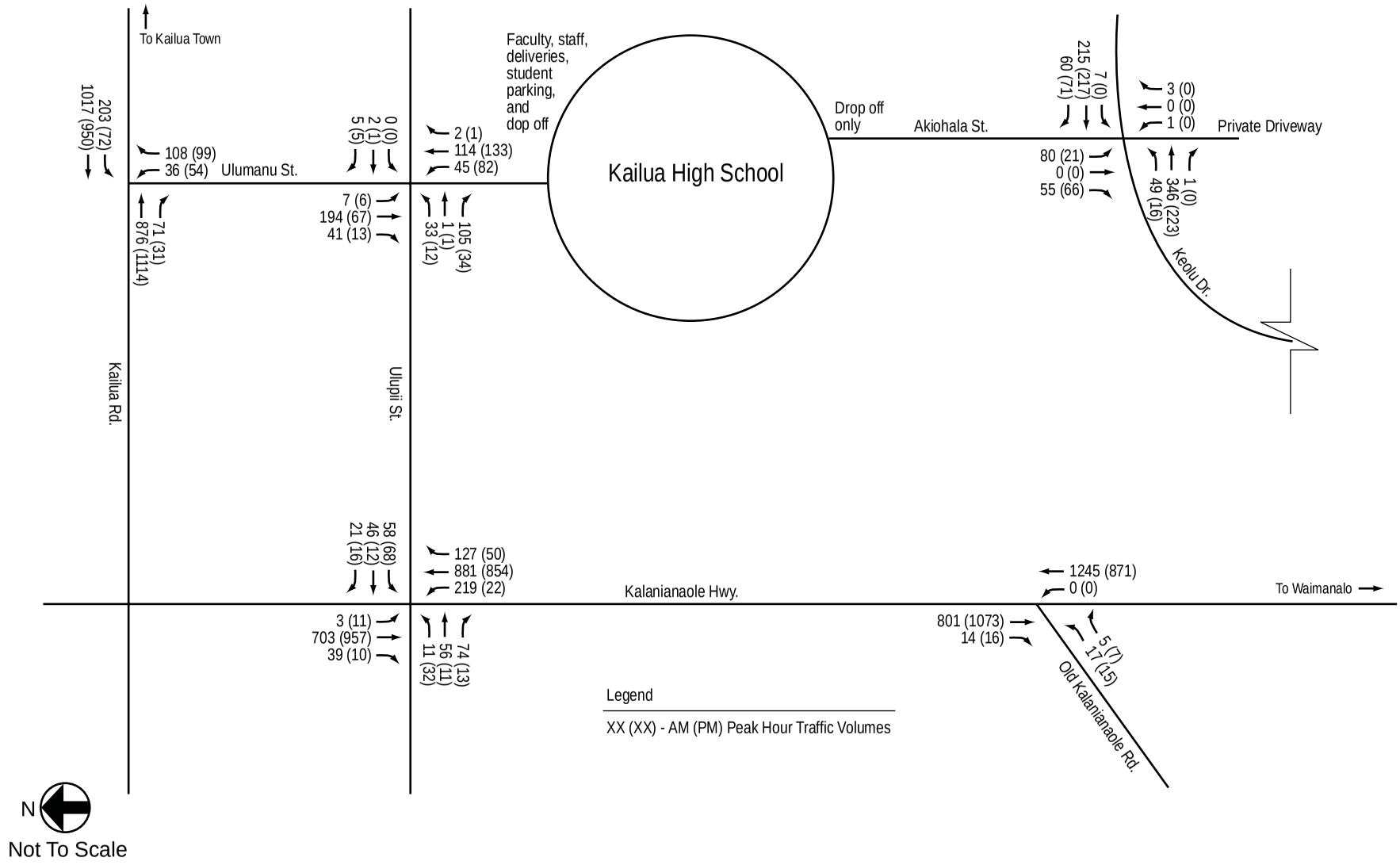
Total Projected Peak Hour Traffic Volumes - Alternative 2
Figure 16
Kailua High School
Kailua Rd.
Ulupii St.
New Access Rd.
Kalanianaole Hwy.
Ulumanu St.
Akiohala St.
Keolu Dr.
Private Driveway
Old Kalanianaole Rd.
To Waimanalo
To Kailua Town
Drop off only
Drop off and student parking
Faculty, staff, and deliveries only
Legend
XX (XX) - AM (PM) Peak Hour Traffic Volumes
Restricted Access Gate
N
Not To Scale

Total Projected Peak Hour Traffic Volumes - Alternative 3
Figure 17
Kailua High School
Kailua Rd.
Ulupii St.
Kalanianaole Hwy.
Old Kalanianaole Rd.
To Waimanalo
To Kailua Town
Ulumanu St.
Akiohala St.
Keolu Dr.
Private Driveway
Drop off and student parking
Faculty, staff, deliveris, student parking, and drop off
Legend
XX (XX) - AM (PM) Peak Hour Traffic Volumes
Not To Scale
N
195 (72)
1138 (950)
108 (90)
36 (33)
141 (31)
876 (1114)
0 (0)
2 (1)
5 (5)
7 (6)
256 (67)
41 (13)
58 (51)
46 (11)
21 (16)
3 (11)
703 (957)
39 (10)
0 (50)
988 (854)
219 (22)
74 (13)
56 (11)
11 (32)
1225 (871)
0 (0)
801 (1056)
14 (16)
5 (7)
17 (15)
2 (1)
114 (123)
45 (64)
15 (34)
1 (1)
33 (12)
7 (0)
215 (217)
64 (71)
80 (26)
0 (0)
55 (89)
3 (0)
0 (0)
1 (0)
1 (0)
346 (223)
73 (16)



Total Peak Hour Traffic Volumes - Alternatives 4 and 7

Figure 18



Total Projected Peak Hour Traffic Volumes - Alternative 5

Figure 19

Table 2 Alternative Analysis LOS and Delay Summary

Intersection	Alternative 1				Alternative 2				Alternative 3				Alternative 4 & 7				Alternative 5			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Ulupii St/ Ulumanu Dr	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
East-bound Ulupii Left/Through/Right	B	10.5	A	9.8	A	9.3	A	8.7	B	12.5	A	9.6	B	12.8	A	9.7	B	11.2	A	9.7
West-bound Ulupii Left/Through/Right	A	9.3	A	9.7	A	8.7	A	8.5	B	10.1	A	9.3	B	10.2	A	9.8	A	9.9	A	9.5
North-bound Ulumanu Left/Through/Right	A	7.6	A	7.4	A	7.2	A	7.2	A	7.9	A	7.5	A	8.0	A	7.5	A	7.8	A	7.5
South-bound Ulumanu Left/Through/Right	A	7.3	A	7.4	A	7.4	A	7.2	A	7.4	A	7.5	A	7.4	A	7.5	A	7.4	A	7.5
Kailua Rd/ Ulumanu Dr	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
West-bound Kailua Left	B	11.4	B	11.5	B	10.8	B	11.4	B	12.3	B	11.6	B	12.6	B	11.6	B	11.8	B	11.6
North-bound Ulumanu Left	D	26.7	D	30.4	C	22.9	D	25.9	E	36.7	D	32.1	E	36.1	D	32.3	D	34.1	D	32.3
North-bound Ulumanu Right	B	12.9	B	14.1	B	12.3	B	13.1	B	13.8	B	14.5	B	14.0	B	14.7	B	13.3	B	14.7
Ulupii St/ Kalanianaole Hwy	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
East-bound Ulupii Left/Through/Right	E	42.7	C	22.7	E	39.7	C	23.9	E	43.4	C	22.3	E	44.6	C	22.3	E	43.8	C	22.3
West-bound Ulupii Left/Through/Right	F	71.0	C	19.0	F	97.1	C	16.5	F	150.6	C	23.7	F	197.1	D	26.2	F	141.9	D	26.2
North-bound Kalanianaole Left	B	10.5	B	10.2	B	11.2	B	10.5	B	10.5	B	10.2	B	10.5	B	10.2	B	10.5	B	10.2
South-bound Kalanianaole Left	B	10.0	A	9.7	B	10.3	B	10.2	B	10.1	A	9.8	B	10.2	A	9.8	B	10.2	A	9.8
Kalanianaole Hwy./ Access Rd	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
West-bound Access Rd Left*	C	20.6	C	15.1	C	22.0	C	17.6	-	-	-	-	-	-	-	-	-	-	-	-
West-bound Access Rd Right	B	11.4	B	10.1	B	12.6	B	11.0	-	-	-	-	-	-	-	-	-	-	-	-
South-bound Kalanianaole Left	A	9.5	A	8.5	A	9.6	A	8.5	-	-	-	-	-	-	-	-	-	-	-	-
Kalanianaole Hwy/ Old Kalanianaole Rd	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
East-bound Old Kalanianaole Left	C	20.4	C	22.7	C	20.4	C	22.7	C	19.6	C	22.0	C	19.7	C	22.3	C	19.7	C	17.8
East-bound Old Kalanianaole Right	B	11.2	B	12.6	B	11.2	B	12.6	B	11.1	B	12.4	B	11.1	B	12.5	B	11.1	B	11.1
North-bound Kalanianaole Left	A	9.5	B	10.7	A	9.5	B	10.7	A	9.4	B	10.5	A	9.4	B	10.6	A	9.4	A	9.4
Keolu Dr/ Akiohala St	**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**				**Unsignalized**			
East bound Keolu Left/Through/Right	A	7.9	A	7.8	A	7.9	A	7.8	A	7.9	A	7.8	A	7.9	A	7.8	A	7.9	A	7.8
West-bound Keolu Left/Through/Right	A	8.0	A	7.7	A	8.0	A	7.7	A	8.0	A	7.7	A	8.0	A	7.7	A	8.0	A	7.7
North-bound Akiohala Left/Through/ Right	B	12.7	B	12.2	B	12.8	B	12.2	B	13.2	B	12.2	B	12.7	B	12.2	B	12.7	B	12.2
South-bound Akiohala Left/ Through/Right	C	16.7	B	11.1	C	16.8	B	11.1	C	18.0	B	11.3	C	16.8	B	11.1	C	16.8	B	11.1

-- The Kalanianaole Highway/Access Road intersection only exists in Alternatives 1 and 2.

* The westbound left-turn movement was analyzed in two stages. The vehicle first moves into the median refuge area, the merges into the southbound traffic.

C. Evaluation of Alternatives

1. Alternative 1- New Access Road and Student Parking Lot

This alternative provides an additional access road for student drop-offs and students that drive and park at KHS. The new access road would usually only have access to the drop off area and a new parking lot. It will not provide vehicular access into the campus under normal operation. It removes approximately 208 vehicles from the Pohakupu neighborhood during the AM peak hour. Faculty, staff, student drop-offs, student parkers, and deliveries will be able to continue using the existing Ulumanu access.

The westbound left-turn at Ulupii Street/Kalanianaole Highway experienced the least delay during the AM peak compared to the other alternatives, as shown in Table 3. The westbound left-turn out of the new access road experienced slightly lower delay than in Alternative 2. The northbound left-turn turning out of Ulumanu Drive onto Kailua Road experienced higher delays than Alternative 2, but lower than the other alternatives.

Reduced traffic volume during peak school access hours result in lower exposure for student pedestrians, thereby improving pedestrian safety.

An advantage of this alternative during special events is a new parking lot located at the south end of Kailua High School (KHS) near the baseball field. This new parking lot coupled with special access to the greater school grounds is projected to reduce the amount of overflow parking that currently affects the Pohakupu neighborhood during special events.

2. Alternative 2- New Access Road and Student Parking Lot With Ulumanu Access Restrictions

This alternative redirects all student drop-offs and student drivers (that intend to park) from the Ulumanu access to the proposed new access road. It, therefore, removes the greatest amount of vehicles from the Pohakupu neighborhood than any of the alternatives. Approximately 394 vehicles per hour are removed from the Pohakupu neighborhood during the AM peak period. Faculty, staff, and deliveries will continue to use the existing Ulumanu access.

The northbound left-turn at from Ulumanu Drive onto Kailua Road experienced the least delay compared to the other alternatives. During the PM peak, the westbound left-turn from Ulupii Street onto Kalanianaole Highway operated with less delay than all other alternatives. Traffic from Kailua Road was assumed to reroute through the already congested intersection of Kalanianaole Highway and Kailua Road instead of turning at Ulumanu Drive. The amount of traffic rerouted is not of sufficient magnitude to significantly change the level of delay at this intersection, but would increase delay for vehicles destined for Kailua High School. Traffic destined for Kailua High School from Waimanalo would experience slightly less delay due to a shorter route. Traffic rerouted through the Enchanted Lake area are low in magnitude and not projected to result in changes in operation.

3. Alternative 3 – New Student Parking Lot off Akiohala Access

This alternative is not projected to have a major impact on existing traffic patterns and, therefore, on traffic in the Pohakupu neighborhood. Akiohala Street is currently a drop-off only access to KHS. Providing a parking lot accessible by Akiohala Street allows students that drive to school to access KHS from Akiohala Street. Based on the travel patterns identified through the intercept surveys, only 28 vehicles per hour (vph) would be likely to redirect from the Ulumanu access to the Akiohala access.

Intersection operations are projected to be similar to Alternatives 4, 5, and 7 but lower than Alternatives 1 and 2.

Because only 28 vph are projected to be redirected and no pedestrian improvements are proposed as part of this alternative, student pedestrian safety was deemed unchanged from the existing condition.

The Ulumanu access will continue to be the main access in this alternative, although the new parking lot is projected to reduce the potential for overflow parking in the Pohakupu neighborhood.

4. Alternative 4 – Add Pedestrian Facilities to Ulumanu Drive

The main feature of Alternative 4 is the addition of sidewalks or footpaths to Ulumanu Drive to formalize the off-street pedestrian path, thereby encouraging pedestrians to utilize it instead of walking in the street. Therefore, it affects vehicular access patterns very little

and would have negligible effect on removing school traffic from the Pohakupu neighborhood.

Intersection operations are projected to be similar to Alternatives 3, 5, and 7 but lower than Alternatives 1 and 2.

The pedestrian facilities on Ulumanu Drive enhance pedestrian safety from a physical separation perspective. Therefore, it is judged that overall pedestrian safety is positive when compared to the existing condition, but less positive than Alternative 1 or 2.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

5. Alternative 5 – Add Pedestrian Facilities to Ulupii Street and Allow Right-Turns

Pedestrian facilities are also proposed for this alternative but are recommended on Ulupii Street instead of Ulumanu Drive. Because the added pedestrian facilities would provide an enhanced path for students and other pedestrians, the current prohibition on right-turns from Kalanianaole Highway to Ulupii Street during the morning peak period was removed in this alternative. Removing this prohibition is projected to add about 90 vehicles per hour onto Ulupii Street during the morning peak period. The overall number of KHS-related vehicles within Pohakupu would not change from the existing condition.

Intersection operations are projected to be similar to Alternatives 3, 4, and 7 but lower than Alternatives 1 and 2.

Although the pedestrian facilities on Ulupii Street enhance pedestrian safety from a physical separation perspective, the increased vehicular exposure caused by the removal of the existing right-turn prohibition during the morning peak period decrease pedestrian safety. Therefore, it is judged that overall pedestrian safety is neutral when compared to the existing condition.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

6. Alternative 7 – No Build

The No Build Alternative will be very similar to the existing condition and to Alternative 3. School vehicular access and parking will be unchanged, including the right-turn prohibition from Kalanianaole Highway to Ulupii Street during the morning peak period. As in Alternative 4, enforcement of the prohibition will be increased.

Intersection operations are projected to be similar to Alternatives 3, 4, and 5 but lower than Alternatives 1 and 2.

No additional pedestrian improvements are proposed as part of this alternative, and student pedestrian safety was deemed unchanged from the existing condition.

Because this alternative does not change access or parking associated with KHS, it is unlikely to reduce overflow parking in the Pohakupu neighborhood during special events.

7. Summary

Table 3 is a matrix that compares key features of the alternatives to summarize the evaluation. As shown, Alternatives 1 and 2 achieve the goals and considerations set for alternative access to Kailua High School (KHS). Both alternatives would remove a large number of vehicles from the Pohakupu neighborhood, they would have the best projected intersection operations, and it would likely reduce overflow parking within the Pohakupu neighborhood during special events at KHS. Alternative 2 would remove almost twice as many vehicles per hour from the Pohakupu neighborhood than Alternative 1 (394 vph versus 208 vph). It would, therefore, reduce pedestrian-vehicular exposure the most thereby having the greatest pedestrian safety and neighborhood livability benefits.

However, State of Hawaii Department of Education headquarters and Kailua High School staff have opposed restrictions at the Ulumanu Drive access on the basis that it would cause operational difficulties for the school. Therefore, Alternative 1 was selected as the recommended alternative. Alternative 1 does significantly reduce school-related vehicles traveling through the Pohakupu neighborhood, thereby increasing pedestrian safety, neighborhood livability, and selected intersection operations. By providing a new parking lot in the vicinity of the athletic fields, it also reduces the potential for spillover parking into the Pohakupu neighborhood during special events at Kailua High School.

Table 3
Summary Evaluation Matrix

	Primary Goals		Other Considerations	
Alternative	**Traffic Removed from Pohakupu**	**Special Event Parking Impacts**	**Pedestrian/ Vehicle Conflict**	**Peak Hour Intersection Operations**
1 New Access Road and Student Parking Lot	208 vph	+	+	+
2 New Access Road and Student Parking Lot (with Ulumanu Restriction)	394 vph	+	+	+
3 Akiohala Parking Lot	28 vph	+	0	0
4 Ulumanu Pedestrian Improvements	0	0	+	0
5 Ulupii Pedestrian Improvements	0	0	0	0
6 Kukunono Access	N/A*	N/A*	N/A*	N/A*
7 No Build	0	0	0	0

Note: "+" = Benefit, "0" = Neutral, "-" = Disbenefit, when compare to existing condition.
vph=vehicles per hour
N/A= not applicable, alternative eliminated due to environmental impacts

Recommended Altertnative

VI. RECOMMENDED ALTERNATIVE

Based on the evaluation of alternatives, the recommended alternative is Alternative 1 – New Access Road and Student Parking Lot. This alternative is projected to significantly decrease traffic in the Pohakupu neighborhood during the peak school traffic periods and reduce the potential for overflow parking in the Pohakupu neighborhood during special events at Kailua High School. It is also projected to create a safer environment for pedestrians within the Pohakupu subdivision and improve the intersection operations for selected traffic movements. Although Alternative 2 – New Access Road and Student Parking Lot with Ulumanu Access Restrictions would result in almost twice as much traffic being removed from Pokakupu neighborhood, it requires restricted operation of the Ulumanu Drive access which has been deemed an operational difficulty by Kailua High School staff.

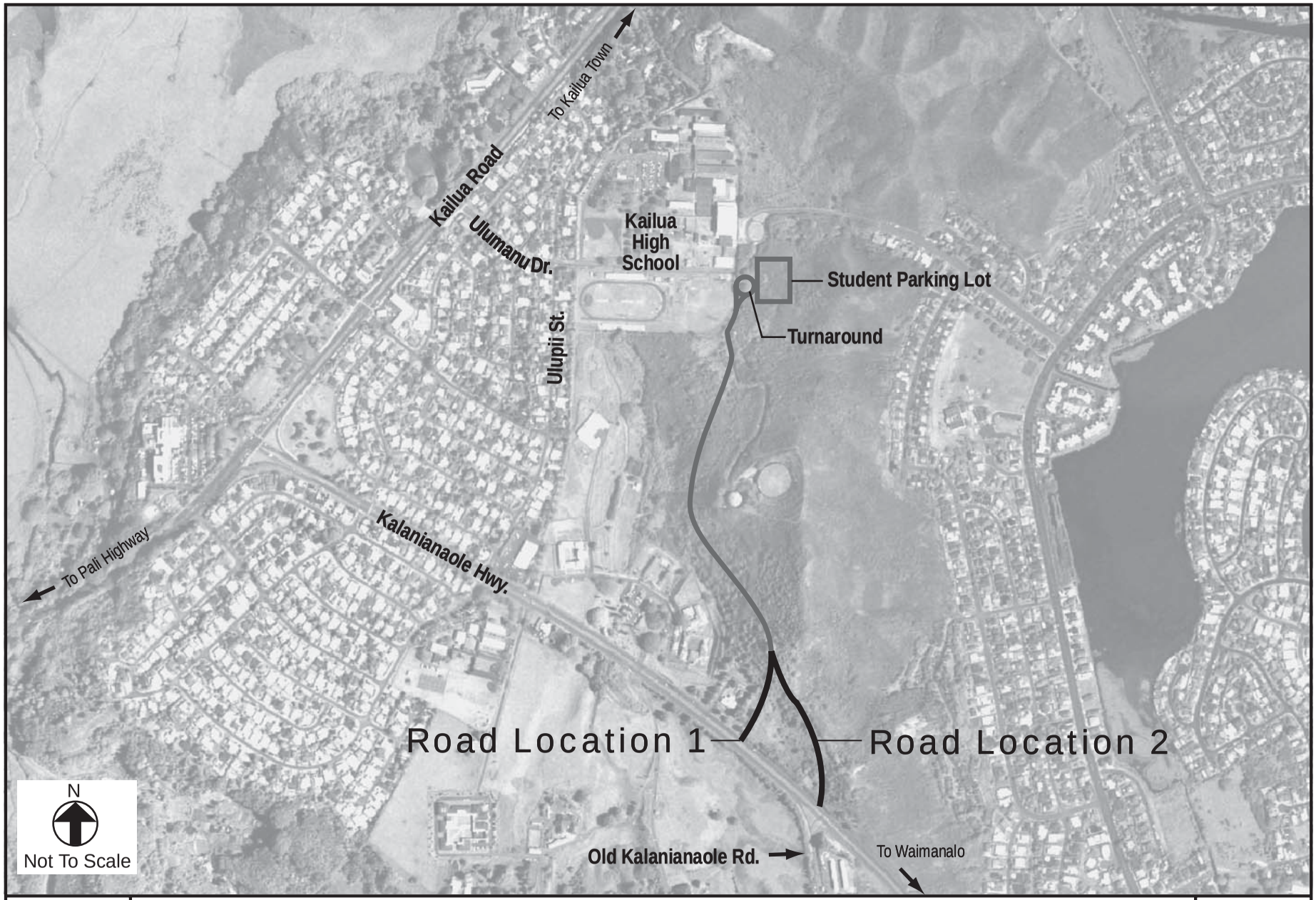
A. Description of Proposed Access Road

1. Alignment of Proposed Access Road

A review of areas surrounding existing Kailua High School yielded only one alignment corridor not blocked by existing development or difficult topography. Figure 20 illustrates a potential alignment for the access road. The proposed access road would intersect Kalanianaole Highway, south of the Hawaii State Youth Correctional Facility (HSYCF), proceed northeast below the ridge line and then terminate at the school near the baseball field. Because of the road's proximity to the HSYCF and the Women's Community Correctional Center (WCCC), the Department of Public Safety (DPS) has stated its security concerns and identified design requirements in a fax transmittal dated April 15, 2005 (Appendix D). Design requirements include a separation of 100 feet to the WCCC's compound security perimeter edge plus a ratio of 10 feet of additional separation for every 10 feet of rise in elevation from the perimeter edge.

2. Location of Proposed Access Road Intersection on Kalanianaole Highway

Figure 20 illustrates two intersection location alternatives that were considered for the proposed access road: connecting to Kalanianaole Highway as a "T"-intersection at approximately STA 39+50, just south of the HSYCF and WCCC, or connecting to Kalanianaole Highway opposite the existing Old Kalanianaole Road.



Access Road Intersection Location Alternatives

Figure 20

Both intersection location alternatives are near the crest of a hill on Kalanianaole Highway with the Old Kalanianaole Highway intersection being closer to the crest. A check was performed to determine that adequate intersection sight distance would be provided for the proposed intersection locations. Guidelines from the *2004 AASHTO – Geometric Design of Highways and Streets* (AASHTO "Green Book") were applied. The posted speed limit along Kalanianaole Highway at Old Kalanianaole Road is 45 MPH, but it decreases to 35 MPH near the WCCC and HSYCF in the northbound direction. Because this is a speed transition area, sight distance analyses were conducted for the higher 45 mph posted speed. A design speed of 50 mph was assumed. Case B1 – Left turn from a minor road with STOP-sign control was the condition evaluated. Tables 4 and 5 summarize the results of the intersection sight distance evaluation.

As shown in Tables 4 and 5, both intersection locations have adequate intersection sight distance available. The location alternative that would create a new T-intersection provides longer sight distance which is desirable from a safety perspective, since the proposed access road will be utilized by school buses. For this reason, the intersection location that proposes a new T-intersection is recommended.

Table 4
Intersection Sight Distance Evaluation
Northbound Kalanianaole Highway
Left-turn Out of Proposed Access Road

Intersection Location	**Type of Design Vehicle**			
	Passenger Car		SU Vehicle (Truck or Bus)	
	Required	Available	Required	Available
Old Kalanianaole	590	625	750	800
New T-Intersection	590	700	750	850

Note: All sight distances are in feet. Design speed = 50 mph.

Table 5
Intersection Sight Distance Evaluation
Southbound Kalanianaole Highway
Left-turn Out of Proposed Access Road

Intersection Location	Type of Design Vehicle			
	Passenger Car		SU Vehicle (Truck or Bus)	
	Required	Available	Required	Available
Old Kalanianaole	700	725	853	950
New T-Intersection	N/A	N/A	N/A	N/A

Note: All sight distances are in feet. Design speed = 50 mph.
N/A = not applicable, median refuge provided to store vehicle.

B. Proposed Access Road/Kalanianaole Highway Intersection Geometry

Table 6 summarizes the projected intersection level of service for the two intersection alternatives. Based on the projected traffic volumes, it is projected that the alternative that proposes a new T-intersection on Kalanianaole Highway will operate better than the alternative that locates the proposed access road opposite the existing Old Kalanianaole Highway. The alternative that proposes a new T-intersection on Kalanianaole Highway operates better because the T-intersection configuration allows the installation of a median refuge area for vehicles turning left out of the proposed access road onto southbound Kalanianaole Highway. This is also a safer maneuver, since a turning vehicle is able to deal with each direction of traffic on Kalanianaole Highway separately. This finding reinforces the sight distance-based recommendation to select the access road location that proposes a new T-intersection on Kalanianaole Highway.

Consistent with this finding, the configuration of the proposed access road intersection with Kalanianaole Highway, is recommended to be an unsignalized T-intersection with STOP-sign control on the proposed access road approach. The access road is recommended to be channelized with separate left and right-turn lanes. An exclusive median left-turn lane is recommended for vehicles turning left from southbound (Waimanalo-bound) Kalanianaole

Table 6
Peak Hour Intersection Level of Service
Proposed Access Road Location Alternatives

Traffic Movement	AM Peak Hour				Mid-Afternoon Peak Hour			
	Old Kalanianaole		New T-Intersection		Old Kalanianaole		New T-Intersection	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Access Road Left	F	72.3	C	22.0	E	39.0	C	17.6
Access Road Right	C	17.7	B	12.6	B	13.5	B	11.0
Old Kalanianaole Left	E	42.8	N/A	N/A	D	33.8	N/A	N/A
Old Kalanianaole Right	B	11.0	N/A	N/A	B	12.2	N/A	N/A
Kalanianaole NB Left	A	9.3	N/A	N/A	B	10.3	NA	NA
Kalanianaole SB Left	B	14.6	A	9.6	B	10.2	B	8.5

Note: delay expressed as seconds per vehicle
NB=northbound, SB=southbound, N/A=not applicable (T-intersection)

Highway into the proposed access road. It is also recommended to install a median refuge area for vehicles turning left out of proposed the access road to southbound (Waimanalo-bound) Kalanianaole Highway. This will allow vehicles turning out of the proposed access road to make the maneuver in two steps. First across the northbound lanes, then from the median into the southbound lanes. This maneuver is safer than a single maneuver and also reduces delay to vehicles.

C. Other Features of the Recommended Alternative

1. Drop-off Circle Driveway Access

It is recommended that a circular drop-off similar to the Akiohala access drop-off be installed at the Kailua High School terminus of the access road. This type of configuration will help to maintain the flow of cars (and school buses).

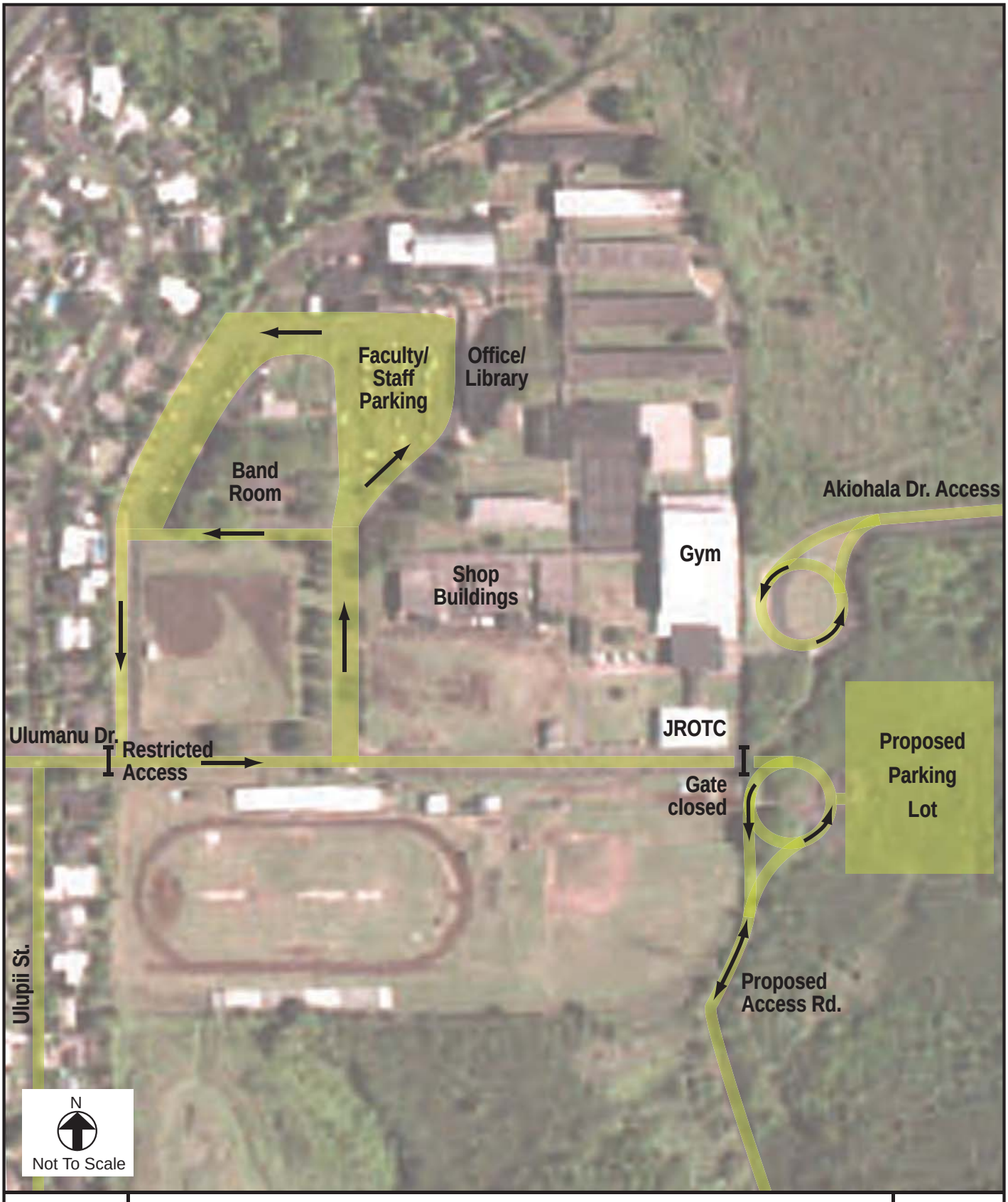
A gated, vehicular access into the KHS campus is recommended from the drop-off circle. This gated access would only be used during special events.

2. Proposed Parking Lot

Construction of a parking lot is recommended near the Kailua High School terminus of the proposed access road. Vehicles would be able to access this parking lot via the proposed access road. During the week, students can park in this proposed parking lot. Figure 21 shows how parking would be operated during a standard weekday school day.

These additional parking stalls will increase the campus parking capacity which is especially important during football games and Graduation when lack of adequate parking causes overflow vehicles to park in the Pohakupu neighborhood. Figure 22 illustrates how parking could be operated during special events.

The existing student parking lot would be available as additional faculty/staff parking or for future expansion of KHS.



Weekday Vehicular Parking Operations

Figure 21



Special Events Vehicular Parking Operations

Figure 22

VII. SUMMARY AND CONCLUSION

A. SUMMARY

Seven alternatives were considered to help alleviate traffic in the Pohakupu neighborhood as well as to increase pedestrian safety along Pohakupu streets. Alternative 1 – New Access Road and Student Parking Lot, Alternative 2 – New Access Road and Student Parking Lot with Ulumanu Access Restrictions, Alternative 3 – New Student Parking Lot Off Akiohala Street Access, Alternative 4 – Ulumanu Drive Pedestrian Improvements, Alternative 5 – Ulupii Street Pedestrian Improvements, Alternative 6 – Makai "Old Kukunono" Access Road, and Alternative 7 – No Build. Alternative 6 was screened out due to environmental constraints and is not part of this evaluation.

The recommended alternative is Alternative 1 – New Access Road and Student Parking Lot. This alternative is projected to significantly decrease traffic in the Pohakupu neighborhood during the peak school traffic periods and reduce the potential for overflow parking in the Pohakupu neighborhood during special events at Kailua High School. It also is projected to create a safer environment for pedestrians walking within the Pohakupu subdivision and improve the intersection operations for selected traffic movements.

The exact alignment of the proposed new access road is currently being developed. The State of Hawaii Department of Public Safety (DPS) has established a list of design requirements and security concerns that will be addressed during design of the roadway. This proposed roadway will intersect Kalanianaole Highway at approximately STA 39+50 as an unsignalized, "T"-intersection.

It is recommended that the proposed access road have a drop-off circle at the south end of the Kailua High School campus. A new parking lot for student parking would constructed near the drop-off circle as part of the recommended alternative. During special events, this parking could be used for overflow parking for special events such as graduation or athletic events. An access would be provided from the drop-off circle into the campus for use only during special events. Normally, this access would be gated.

B. CONCLUSION

This traffic evaluation study recommends that Alternative 1 – New Access Road and Student Parking Lot be selected to provide alternative access to Kailua High School. This alternative is projected to significantly decrease traffic in the Pohakupu neighborhood during the peak school traffic periods and reduce the potential for overflow parking in the Pohakupu neighborhood during special events at Kailua High School. It will accomplish these goals while creating a safer environment for pedestrians walking within the Pohakupu subdivision and improving the intersection operations for selected traffic movements. It is only one of two alternatives that address both goals stated at the outset of the study as being important factors to consider for the alternative access.

Appendix A
Existing Traffic Data

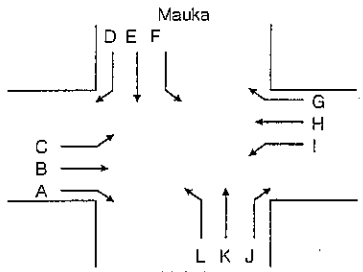
AM COUNT SHEET

Intersection: Kailua Road/Ulumanu Drive

Date: 5/28/2005

By: Name

Weather: Cloudy - Slight drizzle



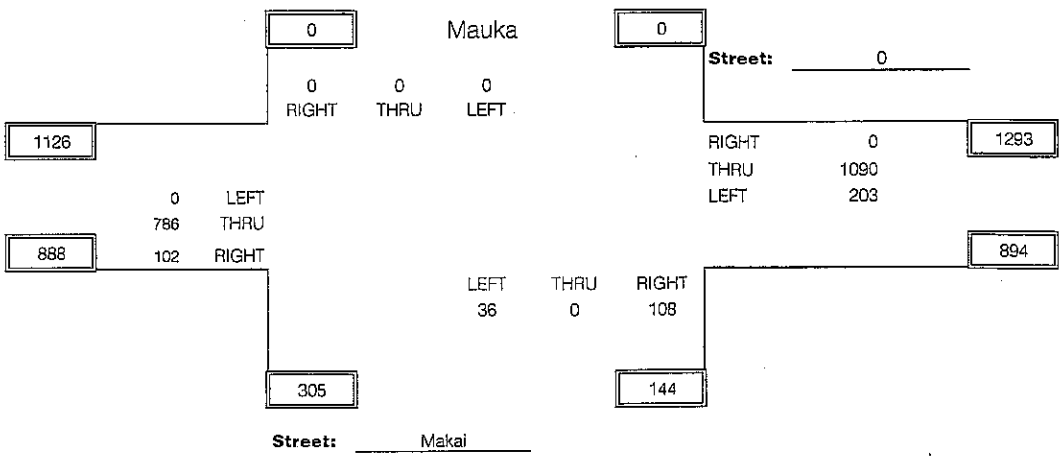
Street: Kailua Road

Street: Ulumanu Drive

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
7:00 AM - 7:15 AM	11	125	0	0	0	0	0	310	42	23	0	14	525	2211
7:15 AM - 7:30 AM	21	206	0	0	0	0	0	377	55	16	0	8	683	2325
7:30 AM - 7:45 AM	19	196	0	0	0	0	0	203	43	20	0	3	484	2192
7:45 AM - 8:00 AM	15	158	0	0	0	0	0	248	58	31	0	9	519	
8:00 AM - 8:15 AM	47	226	0	0	0	0	0	262	47	41	0	16	639	
8:15 AM - 8:30 AM	18	191	0	0	0	0	0	287	18	29	0	7	550	
Phf	0.543	0.869	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.723	0.875	0.659	#DIV/0!	0.563	Peak	Phf
7:15 AM - 8:15 AM	102	786	0	0	0	0	0	1090	203	108	0	36	2325	#DIV/0!

Peak Hour

7:15 AM - 8:15 AM



PARSONS BRINCKERHOFF

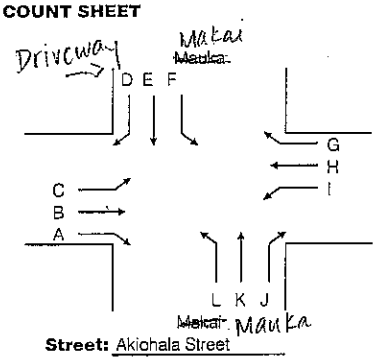
AM COUNT SHEET

Intersection: Keolu Drive/Akiohala Street

Date: 5/28/2005

By: Name

Weather: Cloudy - Slight drizzle



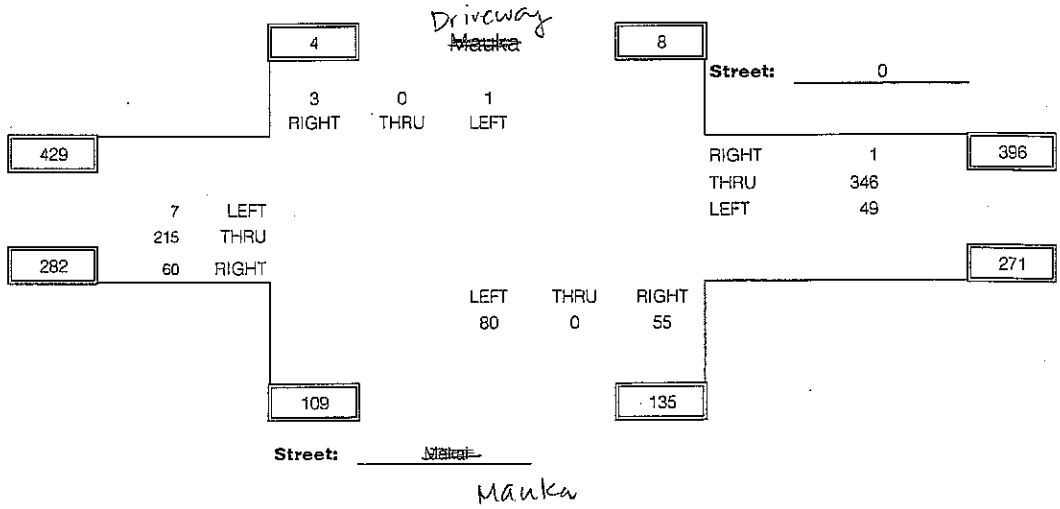
Street: Keolu Drive

Street: Akiohala Street

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
7:00 AM - 7:15 AM	5	35	0	1	0	0	0	60	10	11	0	15	137	774
7:15 AM - 7:30 AM	9	46	1	1	0	1	0	91	11	10	0	19	189	817
7:30 AM - 7:45 AM	9	62	1	1	0	0	1	92	11	10	0	24	211	827
7:45 AM - 8:00 AM	22	62	5	0	0	0	0	101	11	13	0	23	237	
8:00 AM - 8:15 AM	20	45	0	1	0	0	0	62	16	22	0	14	180	
8:15 AM - 8:30 AM	13	54	1	0	0	0	0	82	11	29	0	9	199	
Phf	0.682	0.867	0.350	0.750	#DIV/0!	0.250	0.250	0.856	0.766	0.625	#DIV/0!	0.833	Peak	Phf
7:15 AM - 8:15 AM	60	215	7	3	0	1	1	346	49	55	0	80	817	#DIV/0!

Peak Hour

7:15 AM - 8:15 AM



PARSONS BRINCKERHOFF

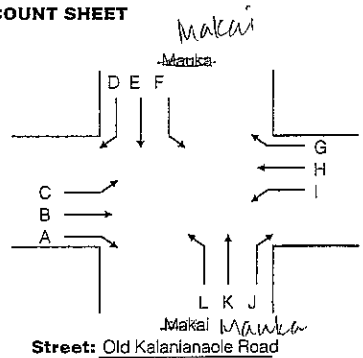
AM COUNT SHEET

Intersection: Kalanianaole Highway/Old Kalanianaole Road

Date: 5/28/2005

By: Name

Weather: Cloudy - drizzle



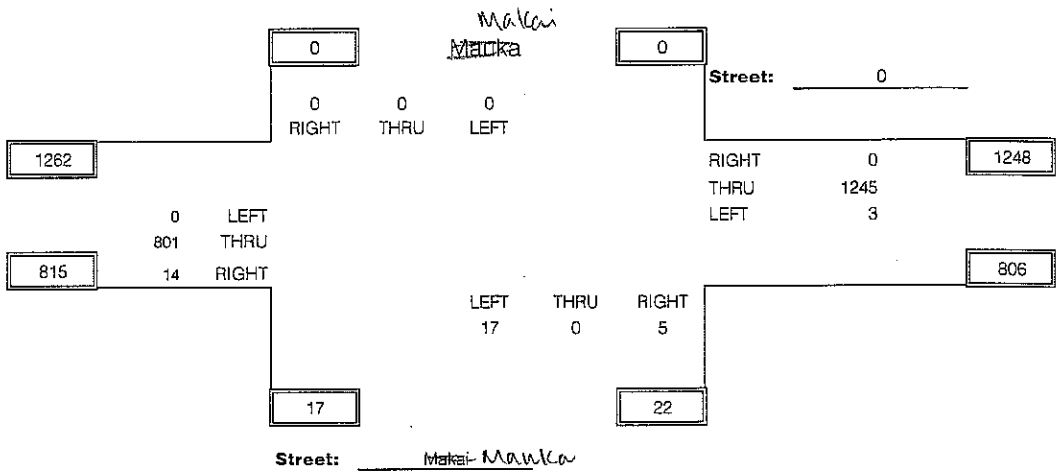
Street: Kalanianaole Highway

Street: Old Kalanianaole Road

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
7:00 AM - 7:15 AM	0	152	0	0	0	0	0	306	1	1	0	9	469	2013
7:15 AM - 7:30 AM	2	156	0	0	0	0	0	320	0	0	0	4	482	2085
7:30 AM - 7:45 AM	3	197	0	0	0	0	0	302	0	2	0	3	507	2148
7:45 AM - 8:00 AM	6	218	0	0	0	0	0	322	0	3	0	6	555	
8:00 AM - 8:15 AM	3	230	0	0	0	0	0	301	3	0	0	4	541	
8:15 AM - 8:30 AM	11	191	0	0	0	0	0	334	2	1	0	6	545	
Phf	0.583	0.871	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.967	0.250	0.417	#DIV/0!	0.708	Peak	Phf
7:15 AM - 8:15 AM	14	801	0	0	0	0	0	1245	3	5	0	17	2085	#DIV/0!

Peak Hour

7:15 AM - 8:15 AM



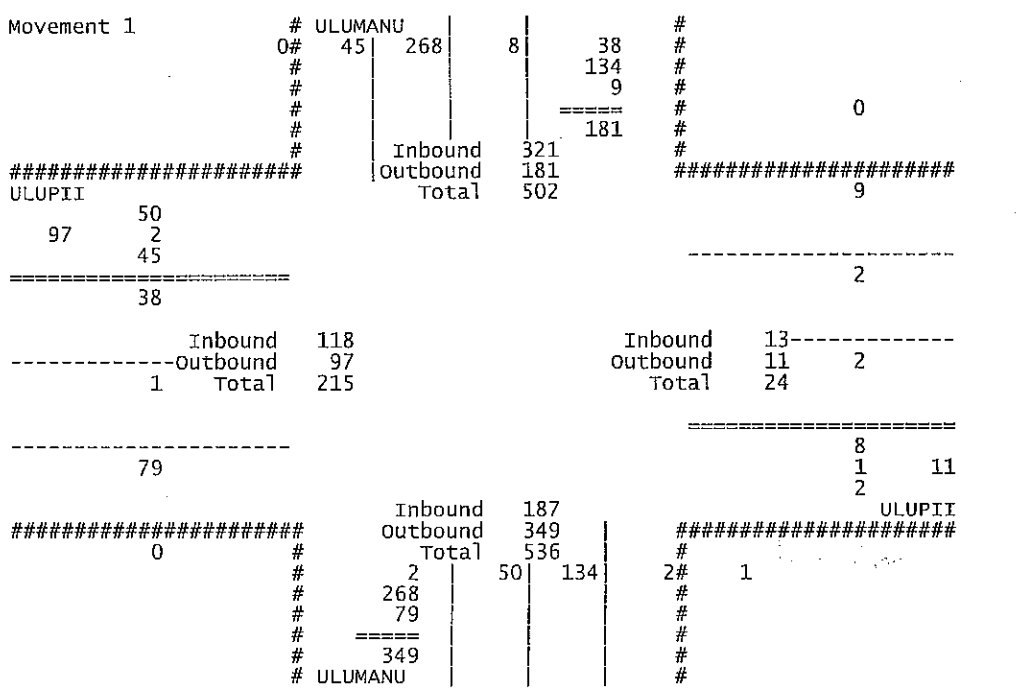
PARSONS BRINCKERHOFF

Parsons Brinckerhoff Quade and Douglas
1001 Bishop Street Suite 3000
Honolulu, HI 96813

Site Code : 00000000
Start Date: 04/28/05
File I.D. : PIIMANAM
Page : 1

Movement 1

Start Time	ULUMANU Southbound Rght	Thru	Left	Other	ULUPII Westbound Rght	Thru	Left	Other	ULUMANU Northbound Rght	Thru	Left	Other	ULUPII Eastbound Rght	Thru	Left	Other	Total-	Other=	0-0
6:30	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	3	1	2
6:45	1	8	0	0	0	0	0	0	0	2	1	0	1	0	1	0	14	0	14 0-0
Total	1	8	0	0	0	1	1	0	0	2	1	1	1	0	1	0	17	1	16
7:00am	3	35	1	0	4	0	0	0	0	18	4	0	4	0	4	0	73	0	73
7:15	11	40	2	0	2	1	0	0	0	6	3	0	10	0	4	0	79	0	79
7:30	17	50	1	0	0	0	0	0	1	26	7	0	16	0	9	0	127	0	127
7:45	9	73	3	0	3	0	0	0	1	41	17	0	17	1	16	0	181	0	181 0-0
Hour Total	40	198	7	0	9	1	0	0	2	91	31	0	47	1	33	0	460	0	460
8:00am	4	62	1	0	0	0	1	0	0	41	18	0	31	0	4	0	162	0	162 0-0
Total	4	62	1	0	0	0	1	0	0	41	18	0	31	0	4	0	162	0	162
Grand	45	268	8	0	9	2	2	0	2	134	50	1	79	1	38	0	639	1	638
% of Total	7.0%	41.9%	1.3%	0.0%	1.4%	.3%	.3%	0.0%	.3%	21.0%	7.8%	.2%	12.4%	.2%	5.9%	0.0%		.2%	99.8%
Apprch %	50.2%				2.0%				29.3%				18.5%						
% of Apprch	14.0%	83.5%	2.5%	0.0%	69.2%	15.4%	15.4%	0.0%	1.1%	71.7%	26.7%	.5%	66.9%	.8%	32.2%	0.0%			

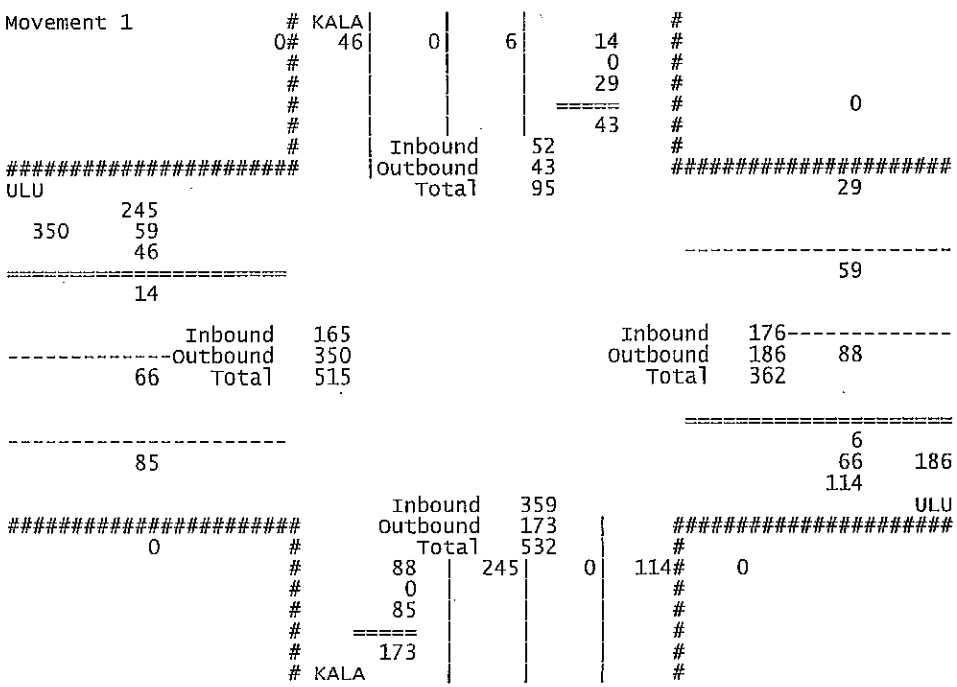


Parsons Brinckerhoff Quade and Douglas
1001 Bishop Street Suite 3000
Honolulu, HI 96813

Site Code : 00000000
Start Date: 04/28/05
File I.D. : KALULUAM
Page : 1

Movement 1

Start Time	KALANIANAOLE Southbound Rght	Thru	Left	Other	ULUPII Westbound Rght	Thru	Left	Other	KALANIANAOLE Northbound Rght	Thru	Left	Other	ULUPII Eastbound Rght	Thru	Left	Other	Total-	Other=	□-0
7:00am	6	0	0	0	2	8	13	0	11	0	21	0	9	3	2	0	75	0	75
7:15	8	0	2	0	2	5	10	0	10	0	76	0	14	10	0	0	137	0	137
7:30	15	0	0	0	3	16	9	0	15	0	68	0	22	13	2	0	163	0	163
7:45	7	0	0	0	10	19	18	0	24	0	53	0	24	21	6	0	182	0	182□-0
Hour Total	36	0	2	0	17	48	50	0	60	0	218	0	69	47	10	0	557	0	557
8:00am	9	0	1	0	6	6	21	0	47	0	22	0	14	12	3	0	141	0	141
8:15	1	0	3	0	6	5	17	0	7	0	5	0	2	7	1	0	54	0	54□-0
Total	10	0	4	0	12	11	38	0	54	0	27	0	16	19	4	0	195	0	195
Grand	46	0	6	0	29	59	88	0	114	0	245	0	85	66	14	0	752	0	752
% of Total	6.1%	0.0%	.8%	0.0%	3.9%	7.8%	11.7%	0.0%	15.2%	0.0%	32.6%	0.0%	11.3%	8.8%	1.9%	0.0%		0.0%	100.0%
Apprch %	6.9%				23.4%				47.7%				21.9%						
% of Apprch	88.5%	0.0%	11.5%	0.0%	16.5%	33.5%	50.0%	0.0%	31.8%	0.0%	68.2%	0.0%	51.5%	40.0%	8.5%	0.0%			



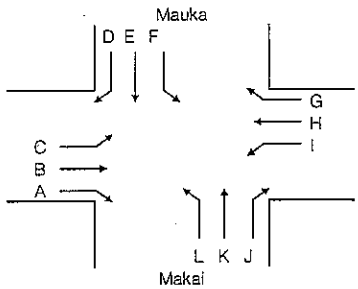
PM COUNT SHEET

Intersection: Kailua Road/Ulumanu Drive

Date: 5/27/2005

By: Name

Weather: Cloudy - Slight drizzle



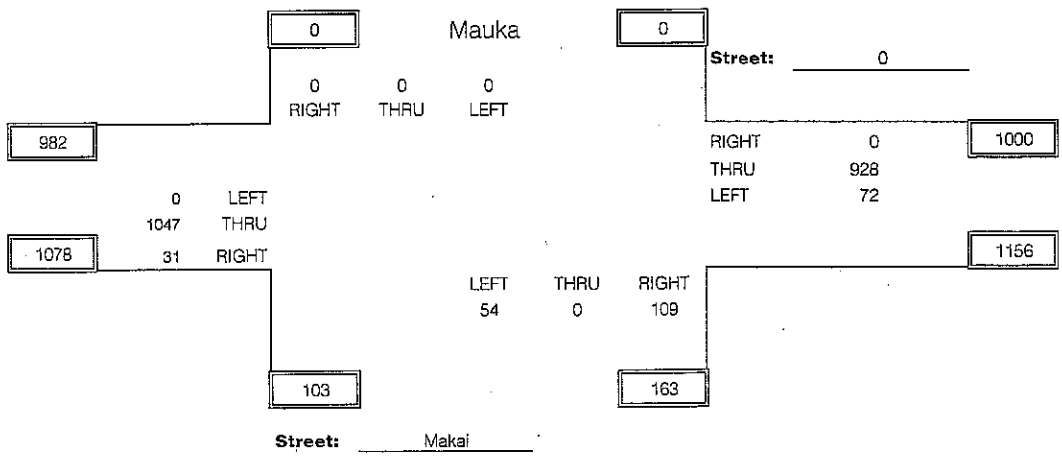
Street: Kailua Road

Street: Ulumanu Drive

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
1:30 PM - 1:45 PM	10	263	0	0	0	0	0	240	20	15	0	7	555	2214
1:45 PM - 2:00 PM	11	232	0	0	0	0	0	214	22	50	0	23	552	2241
2:00 PM - 2:15 PM	3	265	0	0	0	0	0	212	19	21	0	16	536	2271
2:15 PM - 2:30 PM	4	270	0	0	0	0	0	253	18	21	0	5	571	
2:30 PM - 2:45 PM	13	280	0	0	0	0	0	249	13	17	0	10	582	
2:45 PM - 3:00 PM	11	288	0	0	0	0	0	247	18	12	0	6	582	
Phf	0.596	0.935	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.917	0.818	0.545	#DIV/0!	0.587	Peak	Phf
1:45 PM - 2:45 PM	31	1047	0	0	0	0	0	928	72	109	0	54	2241	#DIV/0!

Peak Hour

1:45 PM - 2:45 PM



PARSONS BRINCKERHOFF

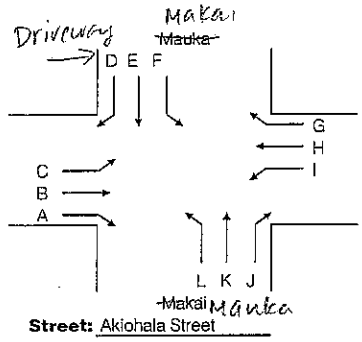
PM COUNT SHEET

Intersection: Keolu Drive/Akiohala Street

Date: 5/27/2005

By: Name

Weather: Cloudy - Slight drizzle



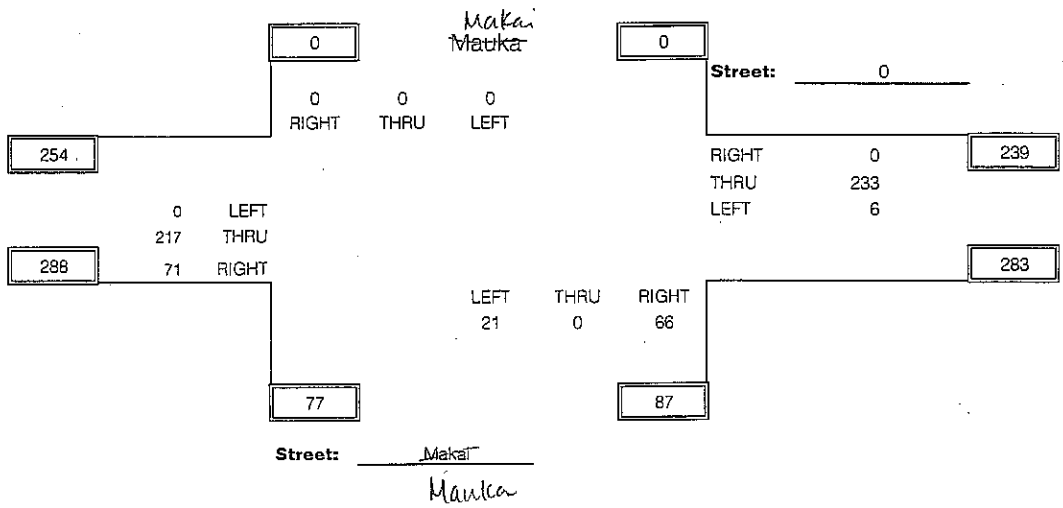
Street: Keolu Drive

Street: Akiohala Street

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
1:30 PM - 1:45 PM	13	68	0	0	0	0	0	61	0	2	0	0	144	635
1:45 PM - 2:00 PM	35	45	0	0	0	0	0	73	3	35	0	7	198	614
2:00 PM - 2:15 PM	14	50	0	0	0	0	0	58	1	16	0	6	145	513
2:15 PM - 2:30 PM	15	67	0	0	0	0	0	52	0	8	0	6	148	
2:30 PM - 2:45 PM	7	55	0	0	0	0	0	50	2	7	0	2	123	
2:45 PM - 3:00 PM	7	48	0	0	0	0	0	34	0	5	0	3	97	
Phf	0.507	0.810	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.798	0.500	0.471	#DIV/0!	0.750	Peak	Phf
1:45 PM - 2:45 PM	71	217	0	0	0	0	0	233	6	66	0	21	614	#DIV/0!

Peak Hour

1:45 PM - 2:45 PM



PARSONS BRINCKERHOFF

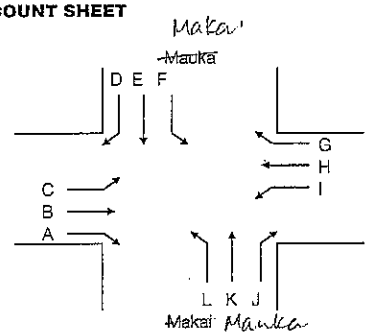
PM COUNT SHEET

Intersection: Kalanianaole Highway/Old Kalanianaole Road

Date: 5/27/2005

By: Name

Weather: Sunny



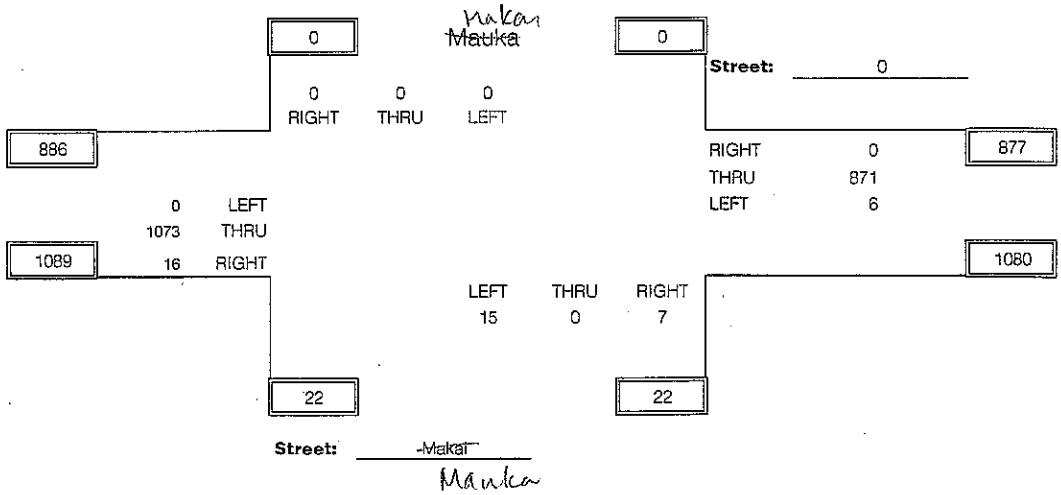
Street: Kalanianaole Highway

Street: Old Kalanianaole Road

TIME	A	B	C	D	E	F	G	H	I	J	K	L	Total Mvmt	Total Hour
1:30 PM - 1:45 PM	3	188	0	0	0	0	0	225	0	0	0	3	419	1851
1:45 PM - 2:00 PM	5	281	0	0	0	0	0	223	0	2	0	5	516	1988
2:00 PM - 2:15 PM	1	258	0	0	0	0	0	204	3	1	0	3	470	1937
2:15 PM - 2:30 PM	5	232	0	0	0	0	0	204	0	2	0	3	446	
2:30 PM - 2:45 PM	5	302	0	0	0	0	0	240	3	2	0	4	556	
2:45 PM - 3:00 PM	6	224	0	0	0	0	0	230	0	1	0	4	465	
Phf	0.800	0.888	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.907	0.500	0.875	#DIV/0!	0.750	Peak	Phf
1:45 PM - 2:45 PM	16	1073	0	0	0	0	0	871	6	7	0	15	1988	#DIV/0!

Peak Hour

1:45 PM - 2:45 PM



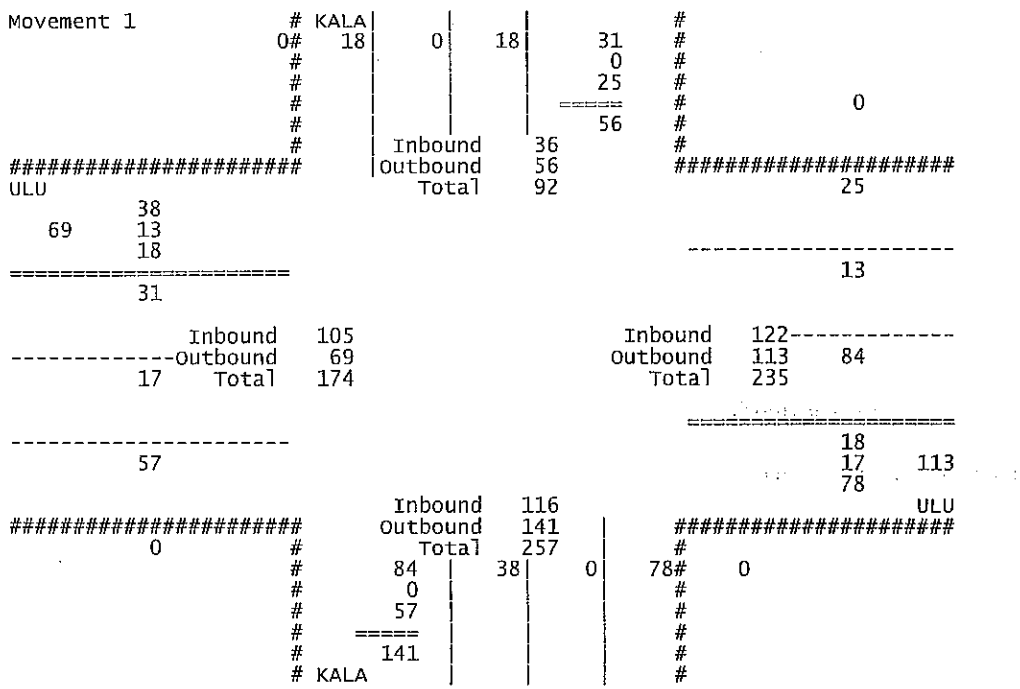
PARSONS BRINCKERHOFF

Parsons Brinckerhoff Quade and Douglas
1001 Bishop Street Suite 3000
Honolulu, HI 96813

Site Code : 00000000
Start Date: 04/27/05
File I.D. : KALULUPM
Page : 1

Movement 1

Start Time	KALANIANAOLE Southbound Rght	Thru	Left	Other	ULUPII Westbound Rght	Thru	Left	Other	KALANIANAOLE Northbound Rght	Thru	Left	Other	ULUPII Eastbound Rght	Thru	Left	Other	Total-	Other=	
1:30	3	0	2	0	5	1	6	0	18	0	10	0	21	6	12	0	84	0	84
1:45	4	0	2	0	4	5	31	0	16	0	7	0	7	4	2	0	82	0	82
Total	7	0	4	0	9	6	37	0	34	0	17	0	28	10	14	0	166	0	166
2:00pm	2	0	2	0	5	2	21	0	16	0	5	0	5	1	4	0	63	0	63
2:15	0	0	2	0	6	4	11	0	13	0	7	0	14	2	4	0	63	0	63
2:30	4	0	5	0	1	1	5	0	5	0	3	0	6	4	3	0	37	0	37
2:45	5	0	5	0	4	0	10	0	10	0	6	0	4	0	6	0	50	0	50
Hour Total	11	0	14	0	16	7	47	0	44	0	21	0	29	7	17	0	213	0	213
Grand	18	0	18	0	25	13	84	0	78	0	38	0	57	17	31	0	379	0	379
% of Total	4.7%	0.0%	4.7%	0.0%	6.6%	3.4%	22.2%	0.0%	20.6%	0.0%	10.0%	0.0%	15.0%	4.5%	8.2%	0.0%		0.0%	100.0%
Apprch %	9.5%				32.2%				30.6%				27.7%						
% of Apprch	50.0%	0.0%	50.0%	0.0%	20.5%	10.7%	68.9%	0.0%	67.2%	0.0%	32.8%	0.0%	54.3%	16.2%	29.5%	0.0%			

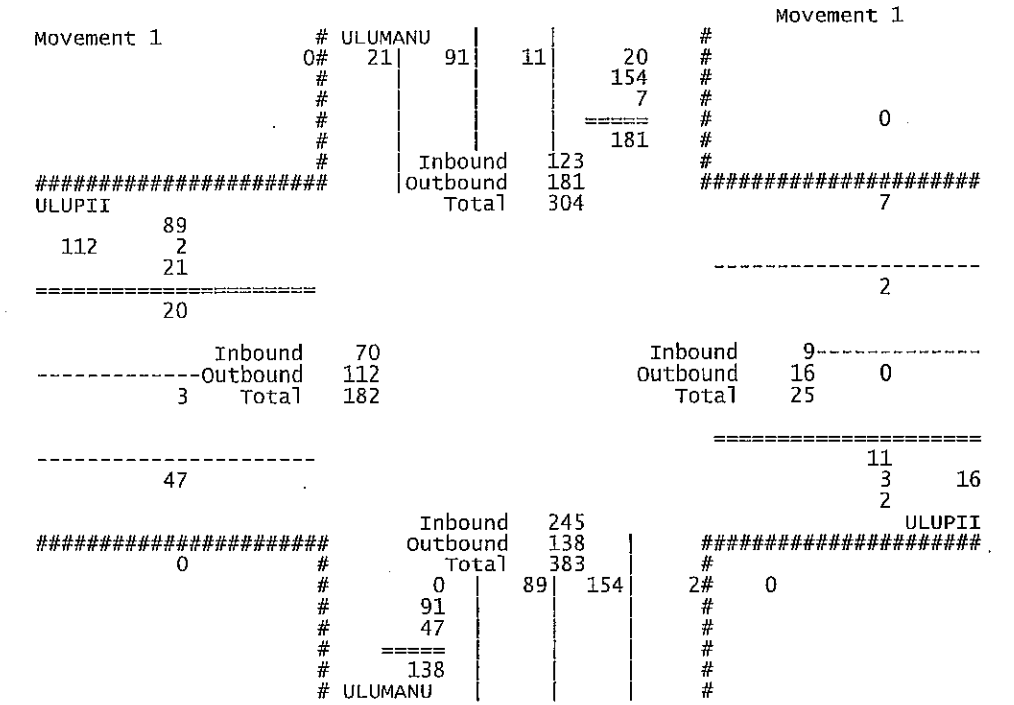


Parsons Brinckerhoff Quade and Douglas
1001 Bishop Street Suite 3000
Honolulu, HI 96813

Site Code : 00000000
Start Date: 04/27/05
File I.D. : PIIMANPM
Page : 1

Movement 1

Start Time	ULUMANU Southbound Rght	Thru	Left	Other	ULUPII Westbound Rght	Thru	Left	Other	ULUMANU Northbound Rght	Thru	Left	Other	ULUPII Eastbound Rght	Thru	Left	Other	Total-	Other=	0-0
1:30	1	4	2	0	1	0	0	0	0	1	0	0	4	0	2	0	15	0	15
1:45	5	30	1	0	0	0	0	0	0	35	20	0	16	0	6	0	113	0	113 0-0
Total	6	34	3	0	1	0	0	0	0	36	20	0	20	0	8	0	128	0	128
2:00pm	3	18	2	0	0	0	0	0	1	61	40	0	11	0	1	0	137	0	137
2:15	4	8	0	0	2	2	0	0	0	18	16	0	5	1	2	0	58	0	58
2:30	1	11	3	0	2	0	0	0	0	19	6	0	2	0	3	0	47	0	47
2:45	5	14	1	0	1	0	0	0	0	12	3	0	6	1	3	0	46	0	46 0-0
Hour Total	13	51	6	0	5	2	0	0	1	110	65	0	24	2	9	0	288	0	288
3:00pm	2	6	2	0	1	0	0	0	0	8	4	0	3	1	3	0	30	0	30 0-0
Total	2	6	2	0	1	0	0	0	0	8	4	0	3	1	3	0	30	0	30
Grand	21	91	11	0	7	2	0	0	2	154	89	0	47	3	20	0	447	0	447
% of Total	4.7%	20.4%	2.5%	0.0%	1.6%	.4%	0.0%	0.0%	.4%	34.5%	19.9%	0.0%	10.5%	.7%	4.5%	0.0%		0.0%	100.0%
Apprch %	27.5%				2.0%				54.8%				15.7%						
% of Apprch	17.1%	74.0%	8.9%	0.0%	77.8%	22.2%	0.0%	0.0%	.8%	62.9%	36.3%	0.0%	67.1%	4.3%	28.6%	0.0%			



Volume Count Report
Generated by MSC3000 Version 2.01 Copyright 1990-1992 Mitron Systems Corporation

Location ..... Kailua Road West of Ulumanu Drive
Location Code .....
County ..... USA
Recorder Set 04/26/05 13:12
Recording Start ... 04/27/05 00:00
Recording End 05/01/05 15:45
Sample Time ..... 15 Minutes
Operator Number ... 35
Machine Number 1
Channel 1
Divide By 2
Summation ..... No
Two-Way ..... No

Wednesday 04/27/05 Channel: 1 Direction: E

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
87	52	46	38	61	131	300	854	887	737	873	985	994	1006	1145	1277	1300	1329	1121	782	593	447	264	180	15489
30	18	12	9	17	17	50	129	248	171	232	249	268	241	252	292	321	316	317	228	157	124	70	52	
20	10	20	11	17	32	70	170	217	169	219	228	252	226	303	348	295	345	351	203	162	124	73	46	
16	10	6	7	10	41	83	258	229	214	212	258	217	282	297	293	360	347	263	199	138	105	74	32	
21	14	8	11	17	41	97	297	193	183	210	250	257	257	293	344	324	321	190	152	136	94	47	50	

AM Peak Hour ..... 07:30 to 08:30 (1020 vehicles) 1145
AM Peak Hour Factor 85.9%
PM Peak Hour ..... 16:30 to 17:30 (1345 vehicles)
PM Peak Hour Factor 93.4%

Thursday 04/28/05 Channel: 1 Direction: E

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
93	66	41	39	59	150	304	809	937	803	805	950	960	995	1151	1248	1243	1321	1092	720	651	479	277	157	15350
26	20	8	10	9	22	53	115	284	190	187	220	250	212	270	272	300	325	306	200	202	122	87	47	
26	15	14	6	11	33	66	213	212	206	217	227	218	265	303	282	325	336	310	172	143	122	74	36	
28	15	8	10	21	47	82	240	224	190	209	236	248	235	311	339	335	334	278	182	158	116	58	37	
13	16	11	13	18	48	103	241	217	217	192	267	244	283	267	355	283	326	198	166	148	119	58	37	

978

AM Peak Hour ..... 07:15 to 08:15 (978 vehicles)
AM Peak Hour Factor 86.1%
PM Peak Hour ..... 17:00 to 18:00 (1321 vehicles)
PM Peak Hour Factor 98.3%

Friday 04/29/05 Channel: 1 Direction: E

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
110	63	53	59	63	161	298	828	917	970	1045	1075	1018	1008	1146	1252	1291	1319	999	784	613	558	499	301	16430
24	15	18	17	9	27	56	113	237	221	305	254	293	240	255	279	321	369	269	204	169	143	129	93	
39	16	14	16	15	45	76	213	216	216	259	272	264	233	298	289	342	315	258	212	166	150	139	75	
26	15	14	10	19	41	64	225	242	234	227	288	231	235	287	340	324	328	239	178	142	133	124	74	
21	17	7	16	20	48	102	277	222	299	254	261	230	300	306	344	304	307	233	190	136	132	107	59	

AM Peak Hour ..... 09:30 to 10:30 (1097 vehicles)
AM Peak Hour Factor 89.9%
PM Peak Hour ..... 15:30 to 16:30 (1347 vehicles)
PM Peak Hour Factor 97.9%

Volume Count Report
Generated by MSC3000 Version 2.01 Copyright 1990-1992 Mitron Systems Corporation

Location ..... Kailua Road West of Ulumanu Drive
Location Code .....
County ..... aaa
Recorder Set 04/26/05 13:13
Recording Start ... 04/27/05 00:00
Recording End 05/01/05 15:45
Sample Time ..... 15 Minutes
Operator Number ... 35
Machine Number 1
Channel 2
Divide By 2
Summation ..... No
Two-Way ..... No

Wednesday 04/27/05 Channel: 2 Direction: W

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
57	45	36	49	120	486	1199	1333	1110	955	869	945	882	967	1015	972	996	896	690	567	445	362	199	106	15301
21	13	16	16	18	68	275	312	296	263	241	244	244	260	244	242	259	283	174	164	103	102	57	35	
12	8	6	10	31	107	277	326	303	233	212	229	186	223	263	255	268	192	199	143	120	102	62	27	
15	11	7	16	31	135	343	349	265	235	222	224	228	239	270	244	244	215	189	133	110	95	40	26	
9	13	7	7	40	176	304	346	246	224	194	248	224	245	238	231	225	206	128	127	112	63	40	18	

1022

AM Peak Hour ..... 07:00 to 08:00 (1333 vehicles)
AM Peak Hour Factor 95.5%
PM Peak Hour ..... 13:45 to 14:45 (1022 vehicles)
PM Peak Hour Factor 94.6%

Thursday 04/28/05 Channel: 2 Direction: W

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
59	30	33	54	136	441	1163	1233	1102	956	987	940	884	877	1021	980	968	898	757	594	431	358	195	114	15211
20	7	9	13	19	59	264	294	281	239	229	275	259	230	242	289	260	262	209	172	127	99	71	35	
10	8	7	17	22	104	304	290	299	270	247	214	229	248	269	238	241	226	192	154	112	103	51	25	
20	8	7	17	38	128	332	276	285	244	251	230	208	194	281	238	222	223	178	131	99	96	44	33	
9	7	10	7	57	150	263	373	237	203	260	221	188	205	229	215	245	187	178	137	93	60	29	21	

1226

AM Peak Hour ..... 07:45 to 08:45 (1238 vehicles)
AM Peak Hour Factor 83.0%
PM Peak Hour ..... 14:15 to 15:15 (1068 vehicles)
PM Peak Hour Factor 92.4%

Friday 04/29/05 Channel: 2 Direction: W

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
62	46	44	57	118	476	1136	1257	1076	1033	1059	1034	1004	1004	1039	1006	1004	1008	838	692	489	475	295	209	16461
17	10	9	16	15	70	251	280	317	243	267	252	251	252	248	249	247	272	222	218	136	139	73	64	
17	15	13	16	26	96	274	316	286	275	279	264	254	248	253	256	235	249	211	186	137	121	76	67	
21	11	9	10	29	122	323	336	246	260	236	258	243	241	273	239	265	254	216	152	113	102	80	43	
7	10	13	15	48	188	288	325	227	255	277	260	256	263	265	262	257	233	189	136	103	113	66	35	

AM Peak Hour ..... 07:15 to 08:15 (1294 vehicles)
AM Peak Hour Factor 96.3%
PM Peak Hour ..... 14:30 to 15:30 (1043 vehicles)
PM Peak Hour Factor 95.5%

Volume Count Report
Generated by MSC3000 Version 2.01 Copyright 1990-1992 Mitron Systems Corporation

Location ..... Kalanianaole Highway South of Ulupii Street
Location Code 21
County .....
Recorder Set 04/26/05 13:41
Recording Start ... 04/27/05 00:00
Recording End 05/01/05 14:45
Sample Time ..... 15 Minutes
Operator Number ... 35
Machine Number 2
Channel 1
Divide By 2
Summation ..... No
Two-Way ..... No

Wednesday 04/27/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
65	50	52	76	277	925	1398	1227	1175	888	853	796	866	911	938	1026	1014	963	813	483	386	295	225	111	15813
13	12	12	18	31	165	427	315	333	206	211	201	232	220	219	241	260	225	203	126	98	82	64	45	
13	16	10	17	54	163	393	310	308	223	232	209	210	232	247	235	244	250	218	151	96	81	60	24	
29	12	14	17	80	277	322	295	279	240	209	186	196	245	246	276	255	243	217	120	100	75	51	28	
10	10	16	24	112	320	256	307	255	219	201	200	228	214	226	274	255	245	175	86	92	57	50	14	

926

AM Peak Hour ..... 05:45 to 06:45 (1462 vehicles)
AM Peak Hour Factor 85.6%
PM Peak Hour ..... 15:30 to 16:30 (1054 vehicles)
PM Peak Hour Factor 95.5%

Thursday 04/28/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
73	37	47	81	296	918	1365	1238	1118	971	850	833	862	855	987	989	1037	810	768	525	389	373	223	123	15768
25	14	5	22	53	129	439	310	299	235	234	226	240	199	251	250	297	226	173	149	95	121	56	35	
18	6	15	14	49	195	366	334	297	260	203	207	228	216	245	212	258	194	189	132	106	84	67	27	
15	10	10	12	88	258	299	314	280	243	215	177	185	234	266	280	251	180	223	126	92	94	44	30	
15	7	17	33	106	336	261	280	242	233	198	223	209	206	225	247	231	210	183	118	96	74	56	31	

1227

AM Peak Hour ..... 05:45 to 06:45 (1440 vehicles)
AM Peak Hour Factor 82.0%
PM Peak Hour ..... 15:30 to 16:30 (1082 vehicles)
PM Peak Hour Factor 91.1%

Friday 04/29/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
73	40	54	85	282	889	1363	1334	1179	1013	1028	968	922	918	1009	1056	1095	999	861	665	453	435	395	257	17373
17	8	9	20	44	143	403	328	319	241	224	224	226	210	281	253	255	241	230	198	114	128	101	81	
26	12	20	20	53	182	386	352	316	237	280	247	233	204	245	255	301	286	231	176	122	97	108	53	
15	17	9	21	93	258	295	345	291	265	265	268	214	229	254	268	243	249	206	162	136	119	102	74	
15	3	16	24	92	306	279	309	253	270	259	229	249	275	229	280	296	223	194	129	81	91	84	49	

AM Peak Hour ..... 05:45 to 06:45 (1390 vehicles)
AM Peak Hour Factor 86.2%
PM Peak Hour ..... 15:30 to 16:30 (1104 vehicles)
PM Peak Hour Factor 91.7%

Volume Count Report
Generated by MSC3000 Version 2.01 Copyright 1990-1992 Mitron Systems Corporation

Location ..... Kalanianaole Highway South of Ulupii Street
Location Code .....
County .....
Recorder Set 04/26/05 13:41
Recording Start ... 04/27/05 00:00
Recording End 05/01/05 14:45
Sample Time ..... 15 Minutes
Operator Number ... 35
Machine Number 2
Channel 2
Divide By 2
Summation ..... No
Two-Way ..... No

Wednesday 04/27/05 Channel: 2 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
136	68	67	45	80	209	495	834	709	606	645	763	839	887	1035	1245	1486	1426	1204	781	652	591	345	234	15382
38	18	22	18	12	25	105	174	193	138	158	175	210	174	266	283	394	368	364	210	161	147	98	64	
39	23	21	7	23	34	124	185	186	150	169	201	212	206	281	350	347	344	319	202	184	159	98	67	
36	20	14	9	25	65	136	216	168	176	153	189	204	247	231	291	365	367	264	189	150	159	73	52	
23	7	10	11	20	85	130	259	162	142	165	198	213	260	257	321	380	347	257	180	157	126	76	51	

AM Peak Hour ..... 07:30 to 08:30 (854 vehicles) 1038
AM Peak Hour Factor 82.4%
PM Peak Hour ..... 16:00 to 17:00 (1486 vehicles)
PM Peak Hour Factor 94.3%

Thursday 04/28/05 Channel: 2 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
125	86	70	63	78	214	456	790	786	660	659	707	698	796	1012	1266	1417	1379	1226	779	677	591	394	228	15157
42	30	16	12	13	26	83	158	203	180	162	178	152	206	229	283	363	349	343	188	182	144	107	56	
28	20	22	18	17	47	90	203	202	149	158	176	175	177	238	318	378	363	341	214	177	187	107	53	
32	16	18	21	24	64	148	194	197	169	169	165	198	184	259	318	329	344	276	193	163	132	98	71	
23	20	14	12	24	77	135	235	184	162	170	188	173	229	286	347	347	323	266	184	155	128	82	48	

835

AM Peak Hour ..... 07:45 to 08:45 (837 vehicles)
AM Peak Hour Factor 89.0%
PM Peak Hour ..... 15:45 to 16:45 (1417 vehicles)
PM Peak Hour Factor 93.7%

Friday 04/29/05 Channel: 2 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
159	91	55	67	75	238	468	849	739	718	720	785	816	868	1070	1156	1466	1493	1134	924	646	732	596	357	16222
50	26	17	18	10	35	82	183	193	167	183	183	212	180	240	261	358	408	288	267	158	164	160	101	
36	32	9	20	23	39	121	208	193	170	199	195	204	232	258	312	350	360	310	244	180	184	140	106	
42	15	19	12	16	57	141	216	183	172	158	189	186	220	298	314	395	370	264	212	156	186	153	76	
31	18	10	17	26	107	124	242	170	209	180	218	214	236	274	269	363	355	272	201	152	198	143	74	

AM Peak Hour ..... 07:15 to 08:15 (859 vehicles)
AM Peak Hour Factor 88.7%
PM Peak Hour ..... 16:30 to 17:30 (1526 vehicles)
PM Peak Hour Factor 93.5%

Volume Count Report
Generated by MSC3000 Version 2.01 Copyright 1990-1992 Mitron Systems Corporation

Location ..... Keolu Drive South of Akiohala Street
Location Code .....
County ..... HNL
Recorder Set 04/27/05 12:24
Recording Start ... 04/27/05 13:00
Recording End 05/01/05 15:30
Sample Time ..... 15 Minutes
Operator Number ... 35
Machine Number 3
Channel 1
Divide By 2
Summation ..... No
Two-Way ..... No

Wednesday 04/27/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
													341	295	364	508	463	327	216	136	119	60	26	2855
													70	90	61	119	99	79	53	37	18	8	9	
													68	70	86	144	118	84	65	40	41	14	6	
													86	78	123	129	123	79	51	30	36	14	6	
													117	57	94	116	123	85	47	29	24	24	5	

335

AM Peak Hour ..... Unavailable
AM Peak Hour Factor ..... Unavailable
PM Peak Hour ..... 16:00 to 17:00 (508 vehicles)
PM Peak Hour Factor 88.2%

Thursday 04/28/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
12	15	11	13	20	75	363	635	439	290	323	258	239	273	444	413	418	406	307	232	192	125	52	39	5594
5	6	2	3	4	7	29	111	134	59	89	64	60	62	119	89	128	99	73	68	47	43	12	12	
1	2	3	3	3	9	82	158	112	68	85	65	69	49	113	84	107	111	93	61	52	27	10	10	
3	4	2	4	8	31	100	189	85	73	78	58	52	63	106	105	81	101	74	56	46	28	19	12	
3	3	4	3	5	28	152	177	108	90	71	71	58	99	106	135	102	95	67	47	47	27	11	5	

658

AM Peak Hour ..... 07:15 to 08:15 (658 vehicles)
AM Peak Hour Factor 87.0%
PM Peak Hour ..... 15:30 to 16:30 (475 vehicles)
PM Peak Hour Factor 88.0%

Friday 04/29/05 Channel: 1 Direction: N

0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Totals
20	12	10	17	24	77	364	618	391	293	285	350	253	336	407	443	426	438	407	260	159	148	108	70	5916
6	7	2	3	4	10	47	123	141	68	70	76	48	58	92	107	98	123	118	72	47	46	26	32	
5	2	1	5	4	12	75	151	98	81	77	74	57	83	133	117	120	110	114	64	47	34	32	15	
8	1	3	3	6	21	96	187	70	74	61	106	69	100	86	103	89	107	81	64	39	27	25	14	
1	2	4	6	10	34	146	157	82	70	77	94	79	95	96	116	119	98	94	60	26	41	25	9	

AM Peak Hour ..... 07:15 to 08:15 (636 vehicles)
AM Peak Hour Factor 85.0%
PM Peak Hour ..... 16:45 to 17:45 (459 vehicles)
PM Peak Hour Factor 93.3%

Appendix B
Levels of Service Definitions

The *Highway Capacity Manual* defines six Levels of Service (LOS), labeled A through F, from best to worst conditions. Levels of Service for signalized and unsignalized intersections are defined in terms of average user delays. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

For unsignalized intersections, the *Highway Capacity Manual* evaluates gaps in the major street traffic flow and calculates available gaps for left-turns across oncoming traffic and for the left and right-turns onto the major roadway from the minor street.

LEVEL-OF-SERVICE A: Little or no delay.

LEVEL-OF-SERVICE B: Short traffic delays.

LEVEL-OF-SERVICE C: Average traffic delays.

LEVEL-OF-SERVICE D: Long traffic delays.

LEVEL-OF-SERVICE E: Very long traffic delays.

LEVEL-OF-SERVICE F: Demand volume exceeds capacity, resulting in extreme delays with queuing that may cause severe congestion and affect other movements at the intersection.

Appendix C

Intersection Capacity Analysis Worksheets

Existing

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	AM Peak Hour - Existing

Site Information

Intersection	Kailua Rd/Ulumanu Dr
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Existing

East/West Street: Kailua Road	North/South Street: Ulumanu Drive
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	876	102	203	1184	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	876	102	203	1184	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	36	0	108	0	0	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	36	0	108	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		203	36		108			
C (m) (vph)		714	145		530			
v/c		0.28	0.25		0.20			
95% queue length		1.17	0.93		0.76			
Control Delay		12.0	37.8		13.5			
LOS		B	E		B			
Approach Delay	--	--	19.6					
Approach LOS	--	--	C					

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	PM Peak Hour - Existing

Site Information

Intersection	Kailua Rd/Ulumanu Dr
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Existing

East/West Street: *Kailua Road* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	1114	31	72	968	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	1114	31	72	968	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	54	0	109	0	0	0
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	54	0	109	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		72	54		109			
C (m) (vph)		618	184		468			
v/c		0.12	0.29		0.23			
95% queue length		0.39	1.16		0.89			
Control Delay		11.6	32.5		15.0+			
LOS		B	D		C			
Approach Delay	--	--	20.8					
Approach LOS	--	--	C					

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JW*
Agency/Co.	*PBQD*
Date Performed	*5/5/2005*
Analysis Time Period	*AM Peak Hour - Existing*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2005*
Project ID	*Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Existing*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*114*	*2*	*7*	*225*	*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*45*	*114*	*2*	*7*	*225*	*41*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*5*	*33*	*1*	*74*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*5*	*33*	*1*	*74*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*45*	*7*		*7*			*108*	
C (m) (vph)	*1310*	*1485*		*713*			*665*	
v/c	*0.03*	*0.00*		*0.01*			*0.16*	
95% queue length	*0.11*	*0.01*		*0.03*			*0.58*	
Control Delay	*7.8*	*7.4*		*10.1*			*11.5*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*10.1*			*11.5*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JW*
Agency/Co.	*PBQD*
Date Performed	*5/5/2005*
Analysis Time Period	*PM Peak Hour - Existing*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2005*
Project ID	*Kailua H.S. Access Rd - Ulupii/Ulumanu - PM Peak - Existing*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*82*	*133*	*1*	*6*	*67*	*13*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*82*	*133*	*1*	*6*	*67*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*2*	*5*	*12*	*1*	*34*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*2*	*5*	*12*	*1*	*34*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*82*	*6*		*7*			*47*	
C (m) (vph)	*1531*	*1463*		*751*			*807*	
v/c	*0.05*	*0.00*		*0.01*			*0.06*	
95% queue length	*0.17*	*0.01*		*0.03*			*0.19*	
Control Delay	*7.5*	*7.5*		*9.8*			*9.7*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay	--	--	*9.8*			*9.7*		
Approach LOS	--	--	*A*			*A*		

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	AM Peak Hour - Existing

Site Information

Intersection	Ulupii St/Kalanianaole Hwy
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Existing

East/West Street: *Ulupii Street*
North/South Street: *Kalanianaole Highway*
Intersection Orientation: *North-South*
Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	219	912	96	3	703	39
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	219	912	96	3	703	39
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	58	46	21	11	56	74
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	58	46	21	11	56	74
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (vph)	219	3		125			141	
C (m) (vph)	874	695		125			226	
v/c	0.25	0.00		1.00			0.62	
95% queue length	0.99	0.01		6.85			3.69	
Control Delay	10.5	10.2		147.6			44.2	
LOS	B	B		F			E	
Approach Delay	--	--	147.6			44.2		
Approach LOS	--	--	F			E		

Copyright © 2000 University of Florida. All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	PM Peak Hour - Existing

Site Information

Intersection	Ulupii St/Kalanianaole Hwy
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak - Existing

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	22	854	50	11	957	10
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	22	854	50	11	957	10
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	68	12	16	32	11	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	68	12	16	32	11	13
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (vph)	22	11		96			56	
C (m) (vph)	720	761		264			264	
v/c	0.03	0.01		0.36			0.21	
95% queue length	0.09	0.04		1.59			0.78	
Control Delay	10.2	9.8		26.2			22.3	
LOS	B	A		D			C	
Approach Delay	--	--	26.2			22.3		
Approach LOS	--	--	D			C		

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	AM Peak Hour - Existing

Site Information

Intersection	Kalani Hwy/Old Kalani Rd
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd-Kalani/OldKalani - AM Peak - Existing

East/West Street: Old Kalanianaole Road	North/South Street: Kalanianaole Highway
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	1245	0	0	801	14
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	3	1245	0	0	801	14
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	17	0	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	0	0	17	0	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	3					17		5
C (m) (vph)	821					261		598
v/c	0.00					0.07		0.01
95% queue length	0.01					0.21		0.03
Control Delay	9.4					19.8		11.1
LOS	A					C		B
Approach Delay	--	--				17.8		
Approach LOS	--	--				C		

Copyright © 2000 University of Florida. All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	PM Peak Hour - Existing

Site Information

Intersection	Kalani Hwy/Old Kalani Rd
Jurisdiction	Honolulu
Analysis Year	2005
Project ID	Kailua H.S. Access Rd-Kalani/OldKalani - PM Peak - Existing

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	6	871	0	0	1073	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	6	871	0	0	1073	16
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	15	0	7
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	0	0	15	0	7
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	6					15		7
C (m) (vph)	648					221		488
v/c	0.01					0.07		0.01
95% queue length	0.03					0.22		0.04
Control Delay	10.6					22.5		12.5
LOS	B					C		B
Approach Delay	--	--				19.3		
Approach LOS	--	--				C		

Copyright © 2000 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JW*
Agency/Co.	*PBQD*
Date Performed	*5/5/2005*
Analysis Time Period	*AM Peak Hour - Existing*

Site Information

Intersection	*Keolu Dr/Akiohala St*
Jurisdiction	*Honolulu*
Analysis Year	*2005*

Project Description *Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak - Existing*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*49*	*346*	*1*	*7*	*215*	*60*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*49*	*346*	*1*	*7*	*215*	*60*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*3*	*80*	*1*	*55*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*3*	*80*	*1*	*55*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*49*	*7*		*5*			*136*	
C (m) (vph)	*1300*	*1223*		*548*			*536*	
v/c	*0.04*	*0.01*		*0.01*			*0.25*	
95% queue length	*0.12*	*0.02*		*0.03*			*1.00*	
Control Delay	*7.9*	*8.0*		*11.6*			*14.0*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*11.6*			*14.0*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JW
Agency/Co.	PBQD
Date Performed	5/5/2005
Analysis Time Period	PM Peak Hour - Existing

Site Information

Intersection	Keolu Dr/Akiohala St
Jurisdiction	Honolulu
Analysis Year	2005

Project Description: Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Existing

East/West Street: Keolu Drive | North/South Street: Akiohala Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	6	223	1	1	217	71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	6	223	1	1	217	71
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	1	21	1	66
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	1	21	1	66
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	6	1		3			88	
C (m) (vph)	1286	1357		590			721	
v/c	0.00	0.00		0.01			0.12	
95% queue length	0.01	0.00		0.02			0.41	
Control Delay	7.8	7.7		11.1			10.7	
LOS	A	A		B			B	
Approach Delay	--	--	11.1			10.7		
Approach LOS	--	--	B			B		

Copyright © 2005 University of Florida, All Rights Reserved

Alternative 1

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	AM Peak Hour - Alt 1

Site Information

Intersection	Kailua Rd/Ulumanu Dr
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Alt 1

East/West Street: Kailua Road | North/South Street: Ulumanu Drive

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		882	93	152	1017	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	882	93	152	1017	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15		75			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	15	0	75	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		152	15		75			
C (m) (vph)		716	181		531			
v/c		0.21	0.08		0.14			
95% queue length		0.80	0.27		0.49			
Control Delay		11.4	26.7		12.9			
LOS		B	D		B			
Approach Delay	--	--	15.2					
Approach LOS	--	--	C					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	PM Peak Hour - Alt1

Site Information

Intersection	Kailua Rd/Ulumanu Dr
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Alt1

East/West Street: Kailua Road | North/South Street: Ulumanu Drive

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1121	30	62	950	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	1121	30	62	950	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	46		70			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	46	0	70	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		62	46		70			
C (m) (vph)		614	187		466			
v/c		0.10	0.25		0.15			
95% queue length		0.34	0.93		0.52			
Control Delay		11.5	30.4		14.1			
LOS		B	D		B			
Approach Delay	--	--	20.6					
Approach LOS	--	--	C					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Ulupii St/Ulumanu Dr
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/11/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour - Alt1		

Project Description: Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Alt1

East/West Street: Ulupii Street | North/South Street: Ulumanu Drive

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	12	60	0	7	165	41
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	12	60	0	7	165	41
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	33	1	15	0	2	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	33	1	15	0	2	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	12	7		7			49	
C (m) (vph)	1377	1556		848			707	
v/c	0.01	0.00		0.01			0.07	
95% queue length	0.03	0.01		0.02			0.22	
Control Delay	7.6	7.3		9.3			10.5	
LOS	A	A		A			B	
Approach Delay	--	--	9.3			10.5		
Approach LOS	--	--	A			B		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Ulupii St/Ulumanu Dr
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/11/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour - Alt1		

Project Description: Kailua H.S. Access Rd - Ulupii/Ulumanu - PM Peak - Alt1

East/West Street: Ulupii Street | North/South Street: Ulumanu Drive

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	33	97	1	6	56	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	33	97	1	6	56	13
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	1	5	0	1	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	12	1	5	0	1	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	33	6		6			18	
C (m) (vph)	1545	1508		889			761	
v/c	0.02	0.00		0.01			0.02	
95% queue length	0.07	0.01		0.02			0.07	
Control Delay	7.4	7.4		9.1			9.8	
LOS	A	A		A			A	
Approach Delay	--	--	9.1			9.8		
Approach LOS	--	--	A			A		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Ulupii St/Kalanianaole Hwy
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/11/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour - Alt1		

Project Description: Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Alt1

East/West Street: Ulupii Street | North/South Street: Kalanianaole Highway

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	221	968	0	3	706	39
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	221	968	0	3	706	39
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	11	56	74	23	46	23
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	11	56	74	23	46	23
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (vph)	221	3		92			141	
C (m) (vph)	872	720		139			230	
v/c	0.25	0.00		0.66			0.61	
95% queue length	1.01	0.01		3.63			3.59	
Control Delay	10.5	10.0		71.0			42.7	
LOS	B	B		F			E	
Approach Delay	--	--	71.0			42.7		
Approach LOS	--	--	F			E		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Ulupii St/Kalanianaole Hwy
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	9/11/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour - Alt1		

Project Description: Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak - Alt1

East/West Street: Ulupii Street | North/South Street: Kalanianaole Highway

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	24	866	18	11	957	10
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	24	866	18	11	957	10
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	32	14	13	17	10	17
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	32	14	13	17	10	17
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L		LTR			LTR	
v (vph)	24	11		44			59	
C (m) (vph)	720	774		301			262	
v/c	0.03	0.01		0.15			0.23	
95% queue length	0.10	0.04		0.51			0.84	
Control Delay	10.2	9.7		19.0			22.7	
LOS	B	A		C			C	
Approach Delay	--	--	19.0			22.7		
Approach LOS	--	--	C			C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*AM Peak Hour - Alt1*

Site Information

Intersection	*Kalanianaole Hwy./Access Road*
Jurisdiction	*Honolulu*
Analysis Year	*2006 PT 1*

Project Description *Kailua H.S. Access Road-Kalani/Access Road-AM Peak-Alt1 Pt.1*

East/West Street: *Access Road* | North/South Street: *Kalanianaole Hwy.*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1197*	*116*	*5*	*5*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1197*	*116*	*5*	*5*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				*62*		*27*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*62*	*0*	*27*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*62*		*27*			
C (m) (vph)		*533*	*210*		*413*			
v/c		*0.01*	*0.30*		*0.07*			
95% queue length		*0.03*	*1.18*		*0.21*			
Control Delay		*11.8*	*29.2*		*14.3*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*24.7*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	AM Peak Hour - Alt1

Site Information

Intersection	Kalanianaole Hwy./Access Road
Jurisdiction	Honolulu
Analysis Year	2006 PT 2

Project Description: Kailua H.S. Access Road-Kalani/Access Rd - AM Peak-Alt1 SB

East/West Street: Access Road | North/South Street: Kalanianaole Hwy.

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		5	5	3	780	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	5	5	3	780	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				62		27
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	0	0	62	0	27
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		3	62		27			
C (m) (vph)		1623	587		1083			
v/c		0.00	0.11		0.02			
95% queue length		0.01	0.35		0.08			
Control Delay		7.2	11.9		8.4			
LOS		A	B		A			
Approach Delay	--	--	10.8					
Approach LOS	--	--	B					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	PM Peak Hour - Alt1

Site Information

Intersection	Kalanianaole Hwy./Access Road
Jurisdiction	Honolulu
Analysis Year	2006 PT 1

Project Description: Kailua H.S. Access Road-Kalani/Access Road-PM Peak-Alt1 PT1

East/West Street: Access Road | North/South Street: Kalanianaole Hwy.

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		854	40	5	5	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	854	40	5	5	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				71		14
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	0	0	71	0	14
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		5	71		14			
C (m) (vph)		767	332		564			
v/c		0.01	0.21		0.02			
95% queue length		0.02	0.80		0.08			
Control Delay		9.7	18.8		11.5			
LOS		A	C		B			
Approach Delay	--	--	17.6					
Approach LOS	--	--	C					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	PM Peak Hour - Alt1

Site Information

Intersection	Kalanianaole Hwy./Access Road
Jurisdiction	Honolulu
Analysis Year	2006 PT 2

Project Description: Kailua H.S. Access Road-Kalani/Access Road-PM Peak-Alt1 PT2

East/West Street: Access Road | North/South Street: Kalanianaole Hwy.

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		5	5	3	780	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	5	5	3	780	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	0	0	14	0	71
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		3	14		71			
C (m) (vph)		1623	587		1083			
v/c		0.00	0.02		0.07			
95% queue length		0.01	0.07		0.21			
Control Delay		7.2	11.3		8.6			
LOS		A	B		A			
Approach Delay	--	--	9.0					
Approach LOS	--	--	A					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	AM Peak Hour - Alt1

Site Information

Intersection	Kalani Hwy/Old Kalani Rd
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: Kailua H.S. Access Rd- Kalani/OldKalani - AM Peak - Alt1

East/West Street: Old Kalanianaole Road

North/South Street: Kalanianaole Highway

Intersection Orientation: North-South

Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	1296			828	14
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	1296	0	0	828	14
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	17		5			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	17	0	5	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	0					17		5
C (m) (vph)	802					251		587
v/c	0.00					0.07		0.01
95% queue length	0.00					0.22		0.03
Control Delay	9.5					20.4		11.2
LOS	A					C		B
Approach Delay	--	--				18.3		
Approach LOS	--	--				C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	PM Peak Hour - Alt1

Site Information

Intersection	Kalani Hwy/Old Kalani Rd
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: Kailua H.S. Access Rd- Kalani/OldKalani - PM Peak - Alt1

East/West Street: Old Kalanianaole Road | North/South Street: Kalanianaole Highway

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	879			1093	16
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	879	0	0	1093	16
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	1	2	0	0	2	0
Configuration	L	T			T	TR
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15		7			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	15	0	7	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L					L		R
v (vph)	0					15		7
C (m) (vph)	637					218		481
v/c	0.00					0.07		0.01
95% queue length	0.00					0.22		0.04
Control Delay	10.7					22.7		12.6
LOS	B					C		B
Approach Delay	--	--				19.5		
Approach LOS	--	--				C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	AM Peak Hour - Alt1

Site Information

Intersection	Keolu Dr/Akiohala St
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak - Alt1

East/West Street: Keolu Drive | North/South Street: Akiohala Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	49	346	1	7	215	60
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	49	346	1	7	215	60
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	3	80	0	55
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	3	80	0	55
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	49	7		5			135	
C (m) (vph)	1300	1223		472			441	
v/c	0.04	0.01		0.01			0.31	
95% queue length	0.12	0.02		0.03			1.28	
Control Delay	7.9	8.0		12.7			16.7	
LOS	A	A		B			C	
Approach Delay	--	--	12.7			16.7		
Approach LOS	--	--	B			C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	SC
Agency/Co.	PBQD
Date Performed	9/11/2006
Analysis Time Period	PM Peak Hour - Alt1

Site Information

Intersection	Keolu Dr/Akiohala St
Jurisdiction	Honolulu
Analysis Year	2006

Project Description: *Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Alt1*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	223	1	1	217	71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	16	223	1	1	217	71
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	1	21	1	66
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	1	21	1	66
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	16	1		3			88	
C (m) (vph)	1286	1357		506			676	
v/c	0.01	0.00		0.01			0.13	
95% queue length	0.04	0.00		0.02			0.45	
Control Delay	7.8	7.7		12.2			11.1	
LOS	A	A		B			B	
Approach Delay	--	--	12.2			11.1		
Approach LOS	--	--	B			B		

Copyright © 2005 University of Florida, All Rights Reserved

Alternative 2

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Kailua Rd/Ulumanu Dr*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*9/11/2006*	Analysis Year	*2006*
Analysis Time Period	*AM PK HR*		

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Alt 2*

East/West Street: *Kailua Road*	North/South Street: *Ulumanu Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*927*	*62*	*85*	*1083*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*927*	*62*	*85*	*1083*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Two Way Left Turn Lane*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*		*30*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*0*	*30*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*85*	*1*		*30*			
C (m) (vph)		*707*	*202*		*526*			
v/c		*0.12*	*0.00*		*0.06*			
95% queue length		*0.41*	*0.01*		*0.18*			
Control Delay		*10.8*	*22.9*		*12.3*			
LOS		*B*	*C*		*B*			
Approach Delay	--	--	*12.6*					
Approach LOS	--	--	*B*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Kailua Rd/Ulumanu Dr*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*9/11/2006*	Analysis Year	*2006*
Analysis Time Period	*PM Peak*		

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Alt2*

East/West Street: *Kailua Road*	North/South Street: *Ulumanu Drive*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1186*	*6*	*30*	*982*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1186*	*6*	*30*	*982*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*14*		*6*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*14*	*0*	*6*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*30*	*14*		*6*			
C (m) (vph)		*593*	*186*		*452*			
v/c		*0.05*	*0.08*		*0.01*			
95% queue length		*0.16*	*0.24*		*0.04*			
Control Delay		*11.4*	*25.9*		*13.1*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*22.1*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*AM Peak Hour - Alt2*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Alt2*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*7*	*65*	*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*7*	*65*	*41*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*33*	*1*	*1*	*0*	*2*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*33*	*1*	*1*	*0*	*2*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*0*	*7*		*7*			*35*	
C (m) (vph)	*1498*	*1636*		*975*			*872*	
v/c	*0.00*	*0.00*		*0.01*			*0.04*	
95% queue length	*0.00*	*0.01*		*0.02*			*0.13*	
Control Delay	*7.4*	*7.2*		*8.7*			*9.3*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay	--	--	*8.7*			*9.3*		
Approach LOS	--	--	*A*			*A*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt2*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description	*Kailua H.S. Access Rd - Ulupii/Ulumanu - PM Peak - Alt2*
East/West Street: *Ulupii Street*	North/South Street: *Ulumanu Drive*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*6*	*0*	*13*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*6*	*0*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*12*	*1*	*0*	*0*	*1*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*12*	*1*	*0*	*0*	*1*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*0*	*6*		*6*			*13*	
C (m) (vph)	*1619*	*1636*		*1046*			*979*	
v/c	*0.00*	*0.00*		*0.01*			*0.01*	
95% queue length	*0.00*	*0.01*		*0.02*			*0.04*	
Control Delay	*7.2*	*7.2*		*8.5*			*8.7*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay	--	--	*8.5*			*8.7*		
Approach LOS	--	--	*A*			*A*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*AM Peak Hour - Alt2*

Site Information

Intersection	*Ulupii St/Kalanianaole Hwy*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Alt2*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*227*	*1029*	*0*	*3*	*795*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*227*	*1029*	*0*	*3*	*795*	*39*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*11*	*42*	*88*	*27*	*39*	*19*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*11*	*42*	*88*	*27*	*39*	*19*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*227*	*3*		*85*			*141*	
C (m) (vph)	*808*	*683*		*114*			*239*	
v/c	*0.28*	*0.00*		*0.75*			*0.59*	
95% queue length	*1.15*	*0.01*		*4.12*			*3.38*	
Control Delay	*11.2*	*10.3*		*97.1*			*39.7*	
LOS	*B*	*B*		*F*			*E*	
Approach Delay	--	--	*97.1*			*39.7*		
Approach LOS	--	--	*F*			*E*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Ulupii St/Kalanianaole Hwy*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*9/11/2006*	Analysis Year	*2006*
Analysis Time Period	*PM Peak Hour - Alt2*		

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak - Alt2*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*29*	*973*	*20*	*11*	*1014*	*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*29*	*973*	*20*	*11*	*1014*	*10*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*32*	*10*	*15*	*0*	*5*	*9*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*32*	*10*	*15*	*0*	*5*	*9*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*29*	*11*		*14*			*57*	
C (m) (vph)	*686*	*704*		*328*			*247*	
v/c	*0.04*	*0.02*		*0.04*			*0.23*	
95% queue length	*0.13*	*0.05*		*0.13*			*0.87*	
Control Delay	*10.5*	*10.2*		*16.5*			*23.9*	
LOS	*B*	*B*		*C*			*C*	
Approach Delay	--	--	*16.5*			*23.9*		
Approach LOS	--	--	*C*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Kalanianaole Hwy./Access Road*
Jurisdiction	*Honolulu*
Analysis Year	*2006 Part 1*

Project Description *Kailua H.S. Access Road-Kalani/Access Road-AM Peak-Alt2 Pt.1*

East/West Street: *Access Road* | North/South Street: *Kalanianaole Hwy.*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1190*	*123*	*5*	*5*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1190*	*123*	*5*	*5*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				*62*		*99*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*62*	*0*	*99*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*62*		*99*			
C (m) (vph)		*533*	*211*		*413*			
v/c		*0.01*	*0.29*		*0.24*			
95% queue length		*0.03*	*1.17*		*0.92*			
Control Delay		*11.8*	*29.0*		*16.4*			
LOS		*B*	*D*		*C*			
Approach Delay	--	--	*21.3*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*AM Peak Hour - Alt2*

Site Information

Intersection	*Kalanianaole Hwy./Access Road*
Jurisdiction	*Honolulu*
Analysis Year	*2006 - Part 2*

Project Description *Kailua H.S. Access Road-Kalani/Access Road-AM Peak-Alt2 Pt.2*

East/West Street: *Access Road* | North/South Street: *Kalanianaole Hwy*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*5*	*5*	*110*	*780*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*5*	*5*	*110*	*780*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				*62*		*99*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*62*	*0*	*99*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*110*	*62*		*99*			
C (m) (vph)		*1623*	*426*		*1083*			
v/c		*0.07*	*0.15*		*0.09*			
95% queue length		*0.22*	*0.51*		*0.30*			
Control Delay		*7.4*	*14.9*		*8.7*			
LOS		*A*	*B*		*A*			
Approach Delay	--	--	*11.1*					
Approach LOS	--	--	*B*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*PM Peak Hour - Alt2*

Site Information

Intersection	*Kalanianaole Hwy./Access Road*
Jurisdiction	*Honolulu*
Analysis Year	*2006 Part 1*

Project Description *Kailua H.S. Access Road-Kalani/Access Road-PM Peak-Alt2 PT1*

East/West Street: *Access Road* | North/South Street: *Kalanianaole Hwy.*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*854*	*42*	*5*	*5*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*854*	*42*	*5*	*5*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				*88*		*128*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*88*	*0*	*128*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*5*	*88*		*128*			
C (m) (vph)		*766*	*332*		*564*			
v/c		*0.01*	*0.27*		*0.23*			
95% queue length		*0.02*	*1.05*		*0.87*			
Control Delay		*9.7*	*19.7*		*13.2*			
LOS		*A*	*C*		*B*			
Approach Delay	--	--	*15.9*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*PM Peak Hour - Alt2*

Site Information

Intersection	*Kalanianaole Hwy./Access Road*
Jurisdiction	*Honolulu*
Analysis Year	*2006 Part 2*

Project Description *Kailua H.S. Access Road-Kalani/Access Road-PM Peak-Alt2 Pt.2*

East/West Street: *Access Road* | North/South Street: *Kalanianaole Hwy.*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*5*	*5*	*59*	*1021*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*5*	*5*	*59*	*1021*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				*88*		*128*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*88*	*0*	*128*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*59*	*88*		*128*			
C (m) (vph)		*1623*	*431*		*1083*			
v/c		*0.04*	*0.20*		*0.12*			
95% queue length		*0.11*	*0.76*		*0.40*			
Control Delay		*7.3*	*15.5*		*8.8*			
LOS		*A*	*C*		*A*			
Approach Delay	--	--	*11.5*					
Approach LOS	--	--	*B*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Kalani Hwy/Old Kalani Rd*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt2*		

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - AM Peak - Alt2*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1296*			*828*	*14*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1296*	*0*	*0*	*828*	*14*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*17*		*5*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*17*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*17*		*5*
C (m) (vph)	*802*					*251*		*587*
v/c	*0.00*					*0.07*		*0.01*
95% queue length	*0.00*					*0.22*		*0.03*
Control Delay	*9.5*					*20.4*		*11.2*
LOS	*A*					*C*		*B*
Approach Delay	--	--				*18.3*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*PM Peak Hour - Alt2*

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - PM Peak - Alt2*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*881*			*1093*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*881*	*0*	*0*	*1093*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*		*7*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*15*		*7*
C (m) (vph)	*637*					*218*		*481*
v/c	*0.00*					*0.07*		*0.01*
95% queue length	*0.00*					*0.22*		*0.04*
Control Delay	*10.7*					*22.7*		*12.6*
LOS	*B*					*C*		*B*
Approach Delay	--	--				*19.5*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Keolu Dr/Akiohala St*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*9/11/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt2*		

Project Description *Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak - Alt2*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*49*	*346*	*1*	*7*	*215*	*60*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*49*	*346*	*1*	*7*	*215*	*60*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*3*	*80*	*1*	*55*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*3*	*80*	*1*	*55*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*49*	*7*		*5*			*136*	
C (m) (vph)	*1300*	*1223*		*472*			*440*	
v/c	*0.04*	*0.01*		*0.01*			*0.31*	
95% queue length	*0.12*	*0.02*		*0.03*			*1.30*	
Control Delay	*7.9*	*8.0*		*12.7*			*16.8*	
LOS	*A*	*A*		*B*			*C*	
Approach Delay	--	--	*12.7*			*16.8*		
Approach LOS	--	--	*B*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Keolu Dr/Akiohala St*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*PM Peak Hour - Alt2*		

Project Description *Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Alt2*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*16*	*223*	*1*	*1*	*217*	*71*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*16*	*223*	*1*	*1*	*217*	*71*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*1*	*21*	*1*	*66*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*1*	*21*	*1*	*66*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*16*	*1*		*3*			*88*	
C (m) (vph)	*1286*	*1357*		*506*			*676*	
v/c	*0.01*	*0.00*		*0.01*			*0.13*	
95% queue length	*0.04*	*0.00*		*0.02*			*0.45*	
Control Delay	*7.8*	*7.7*		*12.2*			*11.1*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*12.2*			*11.1*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

Alternative 3

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	Kailua Rd/Ulumanu Dr
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour- Alt. 3		

Project Description: Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Alt. 3

East/West Street: Kailua Road | North/South Street: Ulumanu Drive

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		876	141	195	1138	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	876	141	195	1138	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	36		108			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	36	0	108	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		195	36		108			
C (m) (vph)		690	149		515			
v/c		0.28	0.24		0.21			
95% queue length		1.16	0.90		0.78			
Control Delay		12.3	36.7		13.8			
LOS		B	E		B			
Approach Delay	--	--	19.5					
Approach LOS	--	--	C					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 3*

Site Information

Intersection	*Kailua Rd/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Alt. 3*

East/West Street: *Kailua Road* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1114*	*31*	*72*	*950*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1114*	*31*	*72*	*950*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*53*		*90*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*53*	*0*	*90*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*72*	*53*		*90*			
C (m) (vph)		*618*	*185*		*468*			
v/c		*0.12*	*0.29*		*0.19*			
95% queue length		*0.39*	*1.13*		*0.70*			
Control Delay		*11.6*	*32.1*		*14.5*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*21.0*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*AM Peak Hour - Alt. 3*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Alt. 3*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*114*	*2*	*7*	*256*	*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*45*	*114*	*2*	*7*	*256*	*41*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*33*	*1*	*15*	*0*	*2*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*33*	*1*	*15*	*0*	*2*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*45*	*7*		*7*			*49*	
C (m) (vph)	*1276*	*1485*		*715*			*530*	
v/c	*0.04*	*0.00*		*0.01*			*0.09*	
95% queue length	*0.11*	*0.01*		*0.03*			*0.30*	
Control Delay	*7.9*	*7.4*		*10.1*			*12.5*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*10.1*			*12.5*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 3*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - PM Peak - Alt. 3*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*64*	*123*	*1*	*6*	*67*	*13*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*64*	*123*	*1*	*6*	*67*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*12*	*1*	*34*	*0*	*1*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*12*	*1*	*34*	*0*	*1*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*64*	*6*		*6*			*47*	
C (m) (vph)	*1531*	*1475*		*836*			*834*	
v/c	*0.04*	*0.00*		*0.01*			*0.06*	
95% queue length	*0.13*	*0.01*		*0.02*			*0.18*	
Control Delay	*7.5*	*7.5*		*9.3*			*9.6*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay	--	--	*9.3*			*9.6*		
Approach LOS	--	--	*A*			*A*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*AM Peak Hour - Alt. 3*

Site Information

Intersection	*Ulupii St/Kalanianaole Hwy*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Alt. 3*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*219*	*951*	*0*	*3*	*703*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*219*	*951*	*0*	*3*	*703*	*39*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*11*	*56*	*74*	*58*	*46*	*21*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*11*	*56*	*74*	*58*	*46*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*219*	*3*		*125*			*141*	
C (m) (vph)	*874*	*730*		*127*			*235*	
v/c	*0.25*	*0.00*		*0.98*			*0.60*	
95% queue length	*0.99*	*0.01*		*6.72*			*3.47*	
Control Delay	*10.5*	*10.0*		*141.9*			*40.9*	
LOS	*B*	*A*		*F*			*E*	
Approach Delay	--	--	*141.9*			*40.9*		
Approach LOS	--	--	*F*			*E*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 3*

Site Information

Intersection	*Ulupii St/Kalanianaole Hwy*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak -Alt. 3*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*22*	*854*	*50*	*11*	*957*	*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*22*	*854*	*50*	*11*	*957*	*10*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*32*	*11*	*13*	*51*	*11*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*32*	*11*	*13*	*51*	*11*	*16*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*22*	*11*		*78*			*56*	
C (m) (vph)	*720*	*761*		*270*			*264*	
v/c	*0.03*	*0.01*		*0.29*			*0.21*	
95% queue length	*0.09*	*0.04*		*1.16*			*0.78*	
Control Delay	*10.2*	*9.8*		*23.7*			*22.3*	
LOS	*B*	*A*		*C*			*C*	
Approach Delay	--	--	*23.7*			*22.3*		
Approach LOS	--	--	*C*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Kalani/OldKalani - PM Peak - Alt. 3*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1225*			*801*	*14*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1225*	*0*	*0*	*801*	*14*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*17*		*5*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*17*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*17*		*5*
C (m) (vph)	*821*					*264*		*598*
v/c	*0.00*					*0.06*		*0.01*
95% queue length	*0.00*					*0.21*		*0.03*
Control Delay	*9.4*					*19.6*		*11.1*
LOS	*A*					*C*		*B*
Approach Delay	--	--				*17.6*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 3*

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - PM Peak - Alt. 3*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*871*			*1056*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*871*	*0*	*0*	*1056*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*		*7*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*15*		*7*
C (m) (vph)	*658*					*227*		*494*
v/c	*0.00*					*0.07*		*0.01*
95% queue length	*0.00*					*0.21*		*0.04*
Control Delay	*10.5*					*22.0*		*12.4*
LOS	*B*					*C*		*B*
Approach Delay	--	--				*18.9*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JN	Intersection	Keolu Dr/Akiohala St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour - Alt. 3		

Project Description: *Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak - Alt. 3*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	73	346	1	7	215	64
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	73	346	1	7	215	64
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	3	80	0	55
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	3	80	0	55
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	73	7		5			135	
C (m) (vph)	1295	1223		446			410	
v/c	0.06	0.01		0.01			0.33	
95% queue length	0.18	0.02		0.03			1.41	
Control Delay	7.9	8.0		13.2			18.0	
LOS	A	A		B			C	
Approach Delay	--	--	13.2			18.0		
Approach LOS	--	--	B			C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Keolu Dr/Akiohala St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour - Alt. 3		

Project Description: Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Alt. 3

East/West Street: Keolu Drive | North/South Street: Akiohala Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	223	1	1	217	71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	16	223	1	1	217	71
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	1	26	1	66
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	1	26	1	66
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	16	1		3			93	
C (m) (vph)	1286	1357		506			660	
v/c	0.01	0.00		0.01			0.14	
95% queue length	0.04	0.00		0.02			0.49	
Control Delay	7.8	7.7		12.2			11.3	
LOS	A	A		B			B	
Approach Delay	--	--	12.2			11.3		
Approach LOS	--	--	B			B		

Copyright © 2005 University of Florida, All Rights Reserved

Alternatives 4 and 7

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	Kailua Rd/Ulumanu Dr
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour - Alt4&7		

Project Description: Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Alt4&7

East/West Street: Kailua Road | North/South Street: Ulumanu Drive

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		876	161	203	1017	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	0	876	161	203	1017	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Raised curb					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	36		108			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	36	0	108	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			1			0
Lanes	1	0	1	0	0	0
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L	L		R			
v (vph)		203	36		108			
C (m) (vph)		678	151		508			
v/c		0.30	0.24		0.21			
95% queue length		1.26	0.88		0.80			
Control Delay		12.6	36.1		14.0			
LOS		B	E		B			
Approach Delay	--	--	19.5					
Approach LOS	--	--	C					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Kailua Rd/Ulumanu Dr*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*PM Peak Hour - Alt4&7*		

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Alt4&7*

East/West Street: *Kailua Road* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1114*	*31*	*72*	*950*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1114*	*31*	*72*	*950*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*54*		*99*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*54*	*0*	*99*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*72*	*54*		*99*			
C (m) (vph)		*618*	*185*		*468*			
v/c		*0.12*	*0.29*		*0.21*			
95% queue length		*0.39*	*1.16*		*0.79*			
Control Delay		*11.6*	*32.3*		*14.7*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*20.9*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*AM Peak Hour - Alt4&7*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Alt4&7*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*114*	*2*	*7*	*284*	*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*45*	*114*	*2*	*7*	*284*	*41*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*33*	*1*	*15*	*0*	*2*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*33*	*1*	*15*	*0*	*2*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*45*	*7*		*7*			*49*	
C (m) (vph)	*1246*	*1485*		*703*			*508*	
v/c	*0.04*	*0.00*		*0.01*			*0.10*	
95% queue length	*0.11*	*0.01*		*0.03*			*0.32*	
Control Delay	*8.0*	*7.4*		*10.2*			*12.8*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*10.2*			*12.8*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt4&7*

Site Information

Intersection	*Ulupii St/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - PM Peak - Alt4&7*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*82*	*133*	*1*	*6*	*67*	*13*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*82*	*133*	*1*	*6*	*67*	*13*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*12*	*1*	*34*	*0*	*2*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*12*	*1*	*34*	*0*	*2*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*82*	*6*		*7*			*47*	
C (m) (vph)	*1531*	*1463*		*751*			*807*	
v/c	*0.05*	*0.00*		*0.01*			*0.06*	
95% queue length	*0.17*	*0.01*		*0.03*			*0.19*	
Control Delay	*7.5*	*7.5*		*9.8*			*9.7*	
LOS	*A*	*A*		*A*			*A*	
Approach Delay	--	--	*9.8*			*9.7*		
Approach LOS	--	--	*A*			*A*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Ulupii St/Kalanianaole Hwy*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt4&7*		

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Alt4&7*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*219*	*1008*	*0*	*3*	*709*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*219*	*1008*	*0*	*3*	*709*	*39*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*11*	*56*	*74*	*58*	*46*	*21*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*11*	*56*	*74*	*58*	*46*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*219*	*3*		*125*			*141*	
C (m) (vph)	*870*	*695*		*119*			*223*	
v/c	*0.25*	*0.00*		*1.05*			*0.63*	
95% queue length	*1.00*	*0.01*		*7.23*			*3.77*	
Control Delay	*10.5*	*10.2*		*166.7*			*45.4*	
LOS	*B*	*B*		*F*			*E*	
Approach Delay	--	--	*166.7*			*45.4*		
Approach LOS	--	--	*F*			*E*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Alt4&7*

Site Information

Intersection	*Ulupii St/Kalanianaole Hwy*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak - Alt4&7*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*22*	*854*	*50*	*11*	*957*	*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*22*	*854*	*50*	*11*	*957*	*10*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*32*	*11*	*13*	*68*	*12*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*32*	*11*	*13*	*68*	*12*	*16*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*22*	*11*		*96*			*56*	
C (m) (vph)	*720*	*761*		*264*			*264*	
v/c	*0.03*	*0.01*		*0.36*			*0.21*	
95% queue length	*0.09*	*0.04*		*1.59*			*0.78*	
Control Delay	*10.2*	*9.8*		*26.2*			*22.3*	
LOS	*B*	*A*		*D*			*C*	
Approach Delay	--	--	*26.2*			*22.3*		
Approach LOS	--	--	*D*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Kalani Hwy/Old Kalani Rd*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt4&7*		

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - AM Peak - Alt4&7*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1245*			*801*	*14*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1245*	*0*	*0*	*801*	*14*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*17*		*5*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*17*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*17*		*5*
C (m) (vph)	*821*					*262*		*598*
v/c	*0.00*					*0.06*		*0.01*
95% queue length	*0.00*					*0.21*		*0.03*
Control Delay	*9.4*					*19.7*		*11.1*
LOS	*A*					*C*		*B*
Approach Delay	--	--				*17.7*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Kalani Hwy/Old Kalani Rd*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*PM Peak Hour - Alt4&7*		

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - PM Peak - Alt4&7*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*871*			*1073*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*871*	*0*	*0*	*1073*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*		*7*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*15*		*7*
C (m) (vph)	*648*					*223*		*488*
v/c	*0.00*					*0.07*		*0.01*
95% queue length	*0.00*					*0.21*		*0.04*
Control Delay	*10.6*					*22.3*		*12.5*
LOS	*B*					*C*		*B*
Approach Delay	--	--				*19.2*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*RI*	Intersection	*Keolu Dr/Akiohala St*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt4&7*		

Project Description *Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak - Alt4&7*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*49*	*346*	*1*	*7*	*215*	*60*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*49*	*346*	*1*	*7*	*215*	*60*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*3*	*80*	*1*	*55*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*3*	*80*	*1*	*55*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*49*	*7*		*5*			*136*	
C (m) (vph)	*1300*	*1223*		*472*			*440*	
v/c	*0.04*	*0.01*		*0.01*			*0.31*	
95% queue length	*0.12*	*0.02*		*0.03*			*1.30*	
Control Delay	*7.9*	*8.0*		*12.7*			*16.8*	
LOS	*A*	*A*		*B*			*C*	
Approach Delay	--	--	*12.7*			*16.8*		
Approach LOS	--	--	*B*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt4&7*

Site Information

Intersection	*Keolu Dr/Akiohala St*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Alt4&7*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*16*	*223*	*1*	*1*	*217*	*71*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*16*	*223*	*1*	*1*	*217*	*71*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*1*	*1*	*1*	*21*	*1*	*66*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1*	*1*	*21*	*1*	*66*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*16*	*1*		*3*			*88*	
C (m) (vph)	*1286*	*1357*		*506*			*676*	
v/c	*0.01*	*0.00*		*0.01*			*0.13*	
95% queue length	*0.04*	*0.00*		*0.02*			*0.45*	
Control Delay	*7.8*	*7.7*		*12.2*			*11.1*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay	--	--	*12.2*			*11.1*		
Approach LOS	--	--	*B*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

Alternative 5

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*SC*	Intersection	*Kailua Rd/Ulumanu Dr*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt. 5*		

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - AM Peak - Alt. 5*

East/West Street: *Kailua Road* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*876*	*71*	*203*	*1017*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*876*	*71*	*203*	*1017*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*36*		*108*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*36*	*0*	*108*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*203*	*36*		*108*			
C (m) (vph)		*733*	*159*		*542*			
v/c		*0.28*	*0.23*		*0.20*			
95% queue length		*1.13*	*0.83*		*0.74*			
Control Delay		*11.8*	*34.1*		*13.3*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*18.5*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 5*

Site Information

Intersection	*Kailua Rd/Ulumanu Dr*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Kailua/Ulumanu - PM Peak - Alt. 5*

East/West Street: *Kailua Road* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		*1114*	*31*	*72*	*950*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1114*	*31*	*72*	*950*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*54*		*99*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*54*	*0*	*99*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*1*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*72*	*54*		*99*			
C (m) (vph)		*618*	*185*		*468*			
v/c		*0.12*	*0.29*		*0.21*			
95% queue length		*0.39*	*1.16*		*0.79*			
Control Delay		*11.6*	*32.3*		*14.7*			
LOS		*B*	*D*		*B*			
Approach Delay	--	--	*20.9*					
Approach LOS	--	--	*C*					

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Ulupii St/Ulumanu Dr*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt. 5*		

Project Description *Kailua H.S. Access Rd - Ulupii/Ulumanu - AM Peak - Alt. 5*

East/West Street: *Ulupii Street* | North/South Street: *Ulumanu Drive*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*45*	*114*	*2*	*7*	*194*	*41*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*45*	*114*	*2*	*7*	*194*	*41*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*33*	*1*	*105*	*0*	*2*	*5*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*33*	*1*	*105*	*0*	*2*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*45*	*7*		*7*			*139*	
C (m) (vph)	*1344*	*1485*		*742*			*721*	
v/c	*0.03*	*0.00*		*0.01*			*0.19*	
95% queue length	*0.10*	*0.01*		*0.03*			*0.71*	
Control Delay	*7.8*	*7.4*		*9.9*			*11.2*	
LOS	*A*	*A*		*A*			*B*	
Approach Delay	--	--	*9.9*			*11.2*		
Approach LOS	--	--	*A*			*B*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Ulupii St/Ulumanu Dr
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour - Alt. 5		

Project Description: Kailua H.S. Access Rd - Ulupii St/Ulumanu - PM Peak - Alt. 5

East/West Street: Ulupii Street | North/South Street: Ulumanu Drive

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	82	133	1	6	67	13
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	82	133	1	6	67	13
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12	1	34	0	1	5
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	12	1	34	0	1	5
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	82	6		6			47	
C (m) (vph)	1531	1463		813			808	
v/c	0.05	0.00		0.01			0.06	
95% queue length	0.17	0.01		0.02			0.18	
Control Delay	7.5	7.5		9.5			9.7	
LOS	A	A		A			A	
Approach Delay	--	--	9.5			9.7		
Approach LOS	--	--	A			A		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Ulupii St/Kalanianaole Hwy*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt. 5*		

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - AM Peak - Alt. 5*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*219*	*881*	*127*	*3*	*703*	*39*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*219*	*881*	*127*	*3*	*703*	*39*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*11*	*56*	*74*	*58*	*46*	*21*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*11*	*56*	*74*	*58*	*46*	*21*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*219*	*3*		*125*			*141*	
C (m) (vph)	*874*	*695*		*127*			*227*	
v/c	*0.25*	*0.00*		*0.98*			*0.62*	
95% queue length	*0.99*	*0.01*		*6.72*			*3.67*	
Control Delay	*10.5*	*10.2*		*141.9*			*43.8*	
LOS	*B*	*B*		*F*			*E*	
Approach Delay	--	--	*141.9*			*43.8*		
Approach LOS	--	--	*F*			*E*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 5*

Site Information

Intersection	*Ulupii St/Kalanianaole Hwy*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd - Ulupii/Kalani - PM Peak - Alt. 5*

East/West Street: *Ulupii Street* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*22*	*854*	*50*	*11*	*957*	*10*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*22*	*854*	*50*	*11*	*957*	*10*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*32*	*11*	*13*	*68*	*12*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*32*	*11*	*13*	*68*	*12*	*16*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*		*LTR*			*LTR*	
v (vph)	*22*	*11*		*96*			*56*	
C (m) (vph)	*720*	*761*		*264*			*264*	
v/c	*0.03*	*0.01*		*0.36*			*0.21*	
95% queue length	*0.09*	*0.04*		*1.59*			*0.78*	
Control Delay	*10.2*	*9.8*		*26.2*			*22.3*	
LOS	*B*	*A*		*D*			*C*	
Approach Delay	--	--	*26.2*			*22.3*		
Approach LOS	--	--	*D*			*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst		Intersection	*Kalani Hwy/Old Kalani Rd*
Agency/Co.	*PBQD*	Jurisdiction	*Honolulu*
Date Performed	*6/30/2006*	Analysis Year	*2006*
Analysis Time Period	*AM Peak Hour - Alt. 5*		

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - AM Peak - Alt. 5*

East/West Street: *Old Kalanianaole Road*	North/South Street: *Kalanianaole Highway*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*1245*			*801*	*14*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*1245*	*0*	*0*	*801*	*14*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*17*		*5*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*17*	*0*	*5*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*17*		*5*
C (m) (vph)	*821*					*262*		*598*
v/c	*0.00*					*0.06*		*0.01*
95% queue length	*0.00*					*0.21*		*0.03*
Control Delay	*9.4*					*19.7*		*11.1*
LOS	*A*					*C*		*B*
Approach Delay	--	--				*17.7*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	
Agency/Co.	*PBQD*
Date Performed	*6/30/2006*
Analysis Time Period	*PM Peak Hour - Alt. 5*

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani - PM Peak - Alt. 5*

East/West Street: *Old Kalanianaole Road* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*871*			*1073*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*0*	*871*	*0*	*0*	*1073*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*0*	*2*	*0*
Configuration	*L*	*T*			*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*		*7*			
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*0*	*7*	*0*	*0*	*0*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
v (vph)	*0*					*15*		*7*
C (m) (vph)	*648*					*223*		*488*
v/c	*0.00*					*0.07*		*0.01*
95% queue length	*0.00*					*0.21*		*0.04*
Control Delay	*10.6*					*22.3*		*12.5*
LOS	*B*					*C*		*B*
Approach Delay	--	--				*19.2*		
Approach LOS	--	--				*C*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Keolu Dr/Akiohala St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	AM Peak Hour - Alt. 5		

Project Description: *Kailua H.S. Access Rd - Keolu/Akiohala - AM Peak -Alt. 5*

East/West Street: *Keolu Drive* | North/South Street: *Akiohala Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	49	346	1	7	215	60
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	49	346	1	7	215	60
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	3	80	1	55
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	3	80	1	55
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	49	7		5			136	
C (m) (vph)	1300	1223		472			440	
v/c	0.04	0.01		0.01			0.31	
95% queue length	0.12	0.02		0.03			1.30	
Control Delay	7.9	8.0		12.7			16.8	
LOS	A	A		B			C	
Approach Delay	--	--	12.7			16.8		
Approach LOS	--	--	B			C		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	SC	Intersection	Keolu Dr/Akiohala St
Agency/Co.	PBQD	Jurisdiction	Honolulu
Date Performed	6/30/2006	Analysis Year	2006
Analysis Time Period	PM Peak Hour -Alt. 5		

Project Description: Kailua H.S. Access Rd - Keolu/Akiohala - PM Peak - Alt. 5

East/West Street: Keolu Drive | North/South Street: Akiohala Street

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	223	1	1	217	71
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	16	223	1	1	217	71
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	1	21	1	66
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR	1	1	1	21	1	66
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	16	1		3			88	
C (m) (vph)	1286	1357		506			676	
v/c	0.01	0.00		0.01			0.13	
95% queue length	0.04	0.00		0.02			0.45	
Control Delay	7.8	7.7		12.2			11.1	
LOS	A	A		B			B	
Approach Delay	--	--	12.2			11.1		
Approach LOS	--	--	B			B		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*AM Peak Hour - Old Kal Acc Rd*

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd/Acc R*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani/Acc Rd - AM Peak*

East/West Street: *Old Kalanianaole Road/Acc Rd* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*1*	*1296*	*123*	*110*	*780*	*14*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*1296*	*123*	*110*	*780*	*14*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*17*	*0*	*5*	*62*	*0*	*99*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*17*	*0*	*5*	*62*	*0*	*99*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*1*
Configuration	*LT*		*R*	*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*LT*		*R*	*LT*		*R*
v (vph)	*1*	*110*	*62*		*99*	*17*		*5*
C (m) (vph)	*836*	*486*	*111*		*381*	*112*		*608*
v/c	*0.00*	*0.23*	*0.56*		*0.26*	*0.15*		*0.01*
95% queue length	*0.00*	*0.86*	*2.65*		*1.02*	*0.51*		*0.02*
Control Delay	*9.3*	*14.6*	*72.3*		*17.7*	*42.8*		*11.0*
LOS	*A*	*B*	*F*		*C*	*E*		*B*
Approach Delay	--	--	*38.8*			*35.6*		
Approach LOS	--	--	*E*			*E*		

Copyright © 2005 University of Florida, All Rights Reserved

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*RI*
Agency/Co.	*PBQD*
Date Performed	*9/11/2006*
Analysis Time Period	*PM Peak Hour - Old Kal Acc Rd*

Site Information

Intersection	*Kalani Hwy/Old Kalani Rd/Acc R*
Jurisdiction	*Honolulu*
Analysis Year	*2006*

Project Description *Kailua H.S. Access Rd- Kalani/OldKalani/Acc Rd - PM Peak*

East/West Street: *Old Kalanianaole Road/Acc Rd* | North/South Street: *Kalanianaole Highway*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*1*	*881*	*42*	*59*	*1021*	*16*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*1*	*881*	*42*	*59*	*1021*	*16*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Raised curb*					
RT Channelized			*0*			*0*
Lanes	*1*	*2*	*0*	*1*	*2*	*0*
Configuration	*L*	*T*	*TR*	*L*	*T*	*TR*
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*15*	*0*	*7*	*88*	*0*	*128*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR	*15*	*0*	*7*	*88*	*0*	*128*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*1*	*0*	*1*	*1*
Configuration	*LT*		*R*	*LT*		*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*	*L*	*LT*		*R*	*LT*		*R*
v (vph)	*1*	*59*	*88*		*128*	*15*		*7*
C (m) (vph)	*678*	*748*	*191*		*552*	*140*		*508*
v/c	*0.00*	*0.08*	*0.46*		*0.23*	*0.11*		*0.01*
95% queue length	*0.00*	*0.26*	*2.19*		*0.89*	*0.35*		*0.04*
Control Delay	*10.3*	*10.2*	*39.0*		*13.5*	*33.8*		*12.2*
LOS	*B*	*B*	*E*		*B*	*D*		*B*
Approach Delay	--	--	*23.9*			*26.9*		
Approach LOS	--	--	*C*			*D*		

Copyright © 2005 University of Florida, All Rights Reserved

Appendix D

Department of Public Safety Fax Transmittal

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
PUBLIC WORKS DIVISION
PLANNING BRANCH
P.O. BOX 119, HONOLULU, HAWAII 96810

FAX COVER SHEET

TO:	Mr. Perry Small Parsons Brinckerhoff Quade & Douglas, Inc.	DATE: SUBJECT:	April 15, 2005 Kailua High School Planning for New Access Road
FAX:	528-2368	DAGS Job No.	12-10-0375
FROM:	Lance Maja	PH: FAX:	(808) 586-0483 (808) 586-0482

ITEMS TRANSMITTED AS CHECKED BELOW:

____ As requested
____ For approval
__xx__ For your information
____ For your action
____ Review and Comment

Originals: ____ will
__xx__ will not be mailed

No. of pages 05 (including cover sheet)

COMMENTS:

Attached for your information is a copy of Department of Public Safety requirements for proposed access road.

Please contact me should have any questions.

CONFIDENTIALITY NOTIFICATION

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED, AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ABOVE ADDRESS VIA THE U.S. POSTAL SERVICE.

LINDA LINGLE
GOVERNOR

JOHN F. PEYTON, JR.
DIRECTOR

CLAIRE Y. NAKAMURA
Deputy Director
Administration

FRANK J. LOPEZ
Deputy Director
Corrections

JAMES L. PROPOTNICK
Deputy Director
Law Enforcement

STATE OF HAWAII
DEPARTMENT OF PUBLIC SAFETY
919 Ala Moana Boulevard, 4th Floor
Honolulu, Hawaii 96814

No. _____

July 25, 2003

TO: J. Phil Tuminello, Executive Assistant
Office of the Director

FROM: John Borders, CIP Coordinator JB
PPB-Capital Projects Staff

SUBJECT: KAILUA HIGH SCHOOL ACCESS ROADWAY
RECOMMENDED PSD REQUIREMENTS

Based on discussions we have recently had with Women's Community Correctional Center (WCCC) as well as PSD General Administration staff, I have recorded the following actions and/or requirements that the general consensus of opinion agreed to recommend to Director Peyton with regards to the development of the proposed Kailua High School access roadway that would cross the southern flank of the WCCC property.

1. WCCC Partial Land Conveyance, with Restrictions

   PSD obtain the assistance of DAGS/DLNR Land Management Division to take the necessary administrative actions (e.g. Subdivision Application, etc.) as may be required to process an Executive Order (E.O.) transfer by the State Land Board to the party who will be responsible for the development of the new access roadway to Kailua High School (ie., the Developer).

   Alternatively, should it prove to be the preferred action, PSD could continue to retain ownership of the lands required for the development of this new access roadway; granting, instead, an easement to the Developer to construct and maintain the area within the easement.

   Any and all costs, associated with whatever conveyance method is decided on, would be the responsibility of the Developer.

   Under either conveyance however, we are recommending certain conditions be imposed to require the Developer to construct and maintain in perpetuity, certain security improvements (i.e., proximity to WCCC compound security perimeter edge,

C. RALPH MORITA, DAGS-PLNG

security fencing, "no-vegetation" zone ribbon) to ensure the WCCC security requirements are not diminished as a result of the development of the access roadway.

Finally, as a condition of the conveyance to be used for the transfer of lands to the Developer, WCCC and/or PSD would be indemnified by the Developer of any liability whatsoever stemming from the development and/or use of this access roadway.

2. **PSD/WCCC Security Concerns.**

1. <u>Proximity to WCCC Compound</u>. A minimum of 100'-0" feet of separation must be maintained from the WCCC compound's exterior security perimeter edge. Further, to account for elevation differences between the access roadway and the WCCC compound below, additional separation must be provided on a ratio of 10'-0" of additional separation for every 10'-0" of rise in elevation (or fraction thereof). The proposed task force, charged with planning for the development of the proposed Kailua High School access roadway should be charged to prepare the formula to ensure compliance with this WCCC proximity requirement.

2. <u>Security Fencing, Roadway Illumination, Signage</u>. The Developer would be responsible for installing a security fencing system to be placed at the edge of the inboard shoulder of the proposed access roadway. PSD staff is recommending use of an elliptically shaped fencing system, 15'-0" high which would run the entire length of the proposed access roadway. Staff also suggests the developer select green or black vinyl-clad chain link fence fabric to facilitate the fencing system's ability to "blend in" with the surrounding vegetation on the hillside.

   Staff recommends the security fencing described above be outfitted with lighting to sufficiently illuminate the access roadway at night. Maintenance of lighting fixtures and other ongoing utility costs would be the responsibility of the Developer.

   Staff further recommends the Developer be responsible for the installation and maintenance of sufficient signage, mounted to the fence at 500 feet O.C., that provides notification to motorists of "NO STOPPING" along roadway and warning of 24-hour video surveillance.

   Staff has prepared an "opinion of probable cost impact" for the aforementioned fencing system, illumination and signage "add-ons" and suggests the Developer budget approximately $250 per lineal foot in construction costs to install them. Based on an earlier estimate of the anticipated access roadway length of 3,500 lineal feet, the estimated costs of these security improvements would be $875,000 and would not include any associated planning, design or other construction-

related costs the Developer would have to expend.

3. Video Surveillance. The Developer would be financially responsible for all costs associated with upgrades to the WCCC security CCTV system that would be specific to its 24-hour monitoring of the entire length of the access roadway. Improvements would include, new pole-mounted, pan/tilt/zoom color and/or infrared cameras; improvements to the CCTV "head-end" to facilitate observation and digitally recording by WCCC staff; and, installation of the appropriate conduit "backbone" to place these CCTV improvements at the appropriate locations.

   An estimate of probable construction cost for these improvements is $75,000 to $100,000 with design and other construction-related expenses extra.

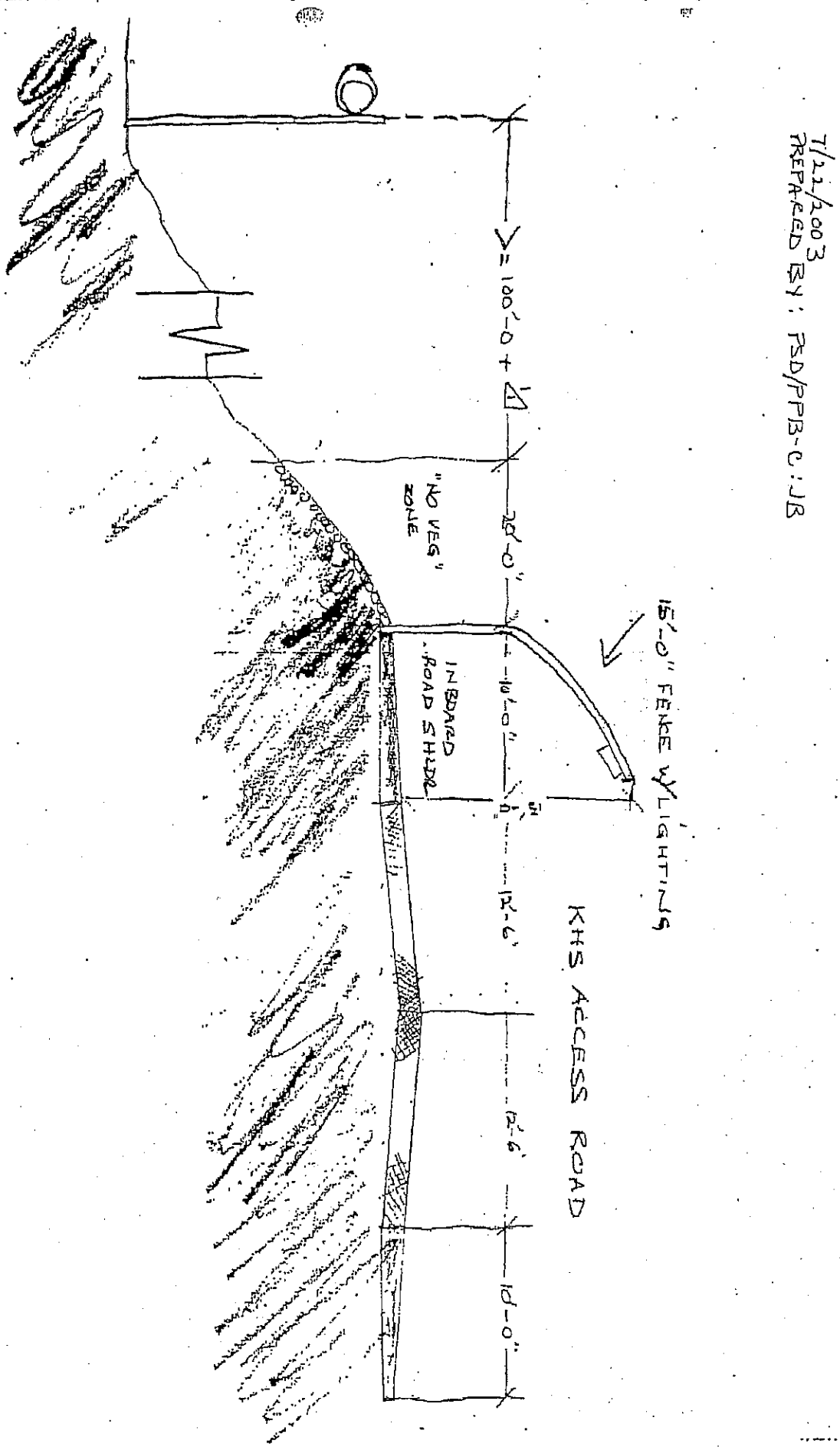
4. Access Roadway Gate[s] Staff recommends this access roadway be gated to ensure the road is not opened during those times access to Kailua High School is not necessary. The Developer should be required to install a gate at the access roadway's intersection with Kalanianaole Highway. The Developer may consider use of a gate typically used to secure State Department of Education facilities, the details of which are probably available at DAGS or DOE.

5. WCCC to be Granted Controlled Access to Roadway. As a condition of the conveyance, the Developer should provide WCCC 24-hour unrestricted access to the roadway to enable staff to inspect for any possible security breaches in the fencing system.

6. Vegetation "No-Pass" Strip. A ribbon of land, approximately 10'-0" to 20'-0" in width, covered with white, crushed rock, and denuded of all vegetation must be installed and regularly maintained by the Developer to allow visual surveillance of the security fenceline by WCCC. This vegetation "No-Pass" strip would be situated adjacent to the security fencing system, opposite the inboard access roadway shoulder side of the WCCC compound. Please refer to the attached diagram.

Attachment

c. DEP-A, ASO, DEP-C, IDA, WCCC, PSD Security Coordinator,
Ralph Morita, DAGS-Planning


7/22/2003
PREPARED BY: PSD/PPB-C:JB
V = 100'-0" + Δ
"NO VEG" ZONE
20'-0"
15'-0" FENCE W/LIGHTING
INBOARD ROAD SHLDR
10'-0"
12'-6"
12'-6"
10'-0"
KHS ACCESS ROAD

APPENDIX F

Kailua High School Additional Access Road
Public and Agency Comments

Type	Commenter	Affiliation	Date of Letter	Relevant Section
Federal Agencies				
Federal Agencies	Leonard, Patrick	Field Supervisor, United States Department of the Interior, Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office	September 14, 2005	No Comment
Federal Agencies	Young, George, P., P.E.	Chief, Regulatory Branch, Department of the Army, U.S. Army Engineer District, Honolulu	September 7, 2005	Engineering, Hydrology, Wetlands
State Agencies				
State Agencies	Aviero, Stephanie	Department of Human Services, Housing and Community Development Corporation of Hawaii	August 22, 2005	Socio-Economic
State Agencies	Hamamoto, Patricia	Superintendent, Department of Education	July 20, 2005	General
State Agencies	Hamamoto, Patricia	Superintendent, Department of Education	September 1, 2005	Administrative, Socio-economic, Safety, Alternatives Analysis
State Agencies	Liu, Jiacai	Land Use Review Coordinator, Environmental Planning Office/DOH	August 22, 2005	General, Standardized Format of DEA
State Agencies	Hendricks, Todd, E.	Project Coordinator, Imu/Air Riflery Roof Construction Project	August 31, 2005	Cultural, Socio-economic, Facilities, Engineering
State Agencies	Morioka, Brennan	Deputy Director of Transportation, Department of Transportation	September 14, 2005	Engineering, Transportation
State Agencies	Murakami, Patricia	Division Administrator, Department of Human Services, Benefit, Employment and Support Servoces Division	August 25, 2005	General, No Comment
State Agencies	Namu`o, Clyde W.	Administrator, Office of Hawaiian Affairs	September 1, 2005	Archaeology, Cultural, Visual

Kailua High School Additional Access Road
Public and Agency Comments

Type	Commenter	Affiliation	Date of Letter	Relevant Section
State Agencies	Sequeira, Francis X.	Warden, State of Hawaii Women's Community Correctional Center	August 8, 2005	General, Design, Socio-economic
State Agencies	Lau, Dennis R., P.E.	Chief, Clean Water Branch, State of Hawaii Department of Health	August 10, 2005	Permits, Drainage, Hydrology
State Agencies	Lau, K. Lawrence, Esq.	Deputy Director, Sate of Hawaii Department of Health	August 15, 2005	Hazardous Materials
State Agencies	Quinn, Daniel S.	State Parks Administrator, State of Hawaii Department of Land and Natural Resources	August 30, 2005	Drainage, Historical and Cultural Resources, Recreation
State Agencies	Salmonson, Genevieve	Director, Office of Environmental Quality Control	August 15, 2005	Socio-economic
State Agencies	Teixeira, Edward T.	Vice Director of Civil Defense, Oahu Civil Defense Agency	August 25, 2005	Administrative
State Agencies	Miyamoto, Patti	Department of Human Services, Hawaii Public Housing Authority	August 22, 2005	Displacement
State Agencies	Nakano, Dean A.	Department of Land and Natural Resourses	September 15, 2005	Water Resources
State Agencies		Disability and Communication Access Board	September 22, 2005	Social, ADA Compliance

Type	Commenter	Affiliation	Date of Letter	Relevant Section
City and County of Honolulu Agencies				
City and County of Honolulu Agencies	Balflour, William D. Jr.	Acting Administrator	August 22, 2005	No Comments
City and County of Honolulu Agencies	Correa, Boisse P.	Chief of Police	August 25, 2005	Traffic, Safety, Correctional Facility Security Concerns
City and County of Honolulu Agencies	Chang, Lester K.C.	Director, Department of Parks and Recreation	September 9, 2005	No Comment
City and County of Honolulu Agencies	Hashiro, Wayne, P.E.	Director, Department of Design and Construction	September 8, 2005	Road Ownership, Maintenance
City and County of Honolulu Agencies	Higa, Laverne, P.E.	Director and Chief Engineer		Administrative
City and County of Honolulu Agencies	Miyamoto, Faith	Deparment of Transportation Services	August 30, 2005	Traffic
City and County of Honolulu Agencies	Shida, Keith S.	Prinicpal Executive, Customer Care Division	August 31, 2005	Construction Drawings Need to be Submitted for Approval
City and County of Honolulu Agencies	Hirata, Edward y.	Director, Department of Transportation Services	August 29, 2005	Traffic
City and County of Honolulu Agencies	Morikawa, Deborah K.	Director, Department of Community Services	August 30, 2005	No Comment
City and County of Honolulu Agencies	Hannemann, Mufi	Mayor, City and County of Honolulu	September 8, 2005	Road Ownership, Maintenance, emergency response, liability

Kailua High School Additional Access Road
Public and Agency Comments

Type	Commenter	Affiliation	Date of Letter	Relevant Section
Intergovernmental Task Force				
Task Force	Heh, Mike	Community Project Leader	September 5, 2005	Safety, Traffic, Adminstrative, emergency conditions
Task Force	Shiu, Gregory	Board of Water Supply Task Force Designee	September 14, 2005	Engineering, BWS Access Road
Task Force	Masuno, Daniel	Board of Water Supply Task Force Designee	August 11, 2005	Water Resources
Community Organizations and Businesses				
Community Organizations and Businesses	Bryant-Hunter, Cathy, Chair; Glanstein, Debbi, Legislative Liason	Chair, Neighborhood Board	August 23, 2005	Safety, Socio-economic, emergency conditions, Alternatives Analysis, improved commute time for Waimanalo residents
Community Organizations and Businesses	Moore, Mary	President, Olomana Community Association	August 29, 2005	Safety, Traffic
Community Organizations and Businesses	Wai, Francine	Ececutive Director, American Disabilities and Communications Access Board	September 22, 2005	ADA
Community Organizations and Businesses	Wakamatsu, Janice	Co-Secretary, Kailua High Alumni Association	September 15, 2005	No Comment, Want to see DEA
Utilities				
Utilities	Calvet, Charles, E., P.E. Manager, Engineering	The Gas Company	August 23, 2005	No Comments

Type	Commenter	Affiliation	Date of Letter	Relevant Section
Pohakapu Neighborhood: Residents, Businesses, and Landowners				
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Brassfield, Mark; Dozier, Char	Pohakupu resident (Ulupii Street)	August 17, 2005	General, Design, Socio-economic
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Cummings, Robert M.	Pohakupu resident (Kahako St)	August 30, 2005	Traffic, Safety
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Dwight, Robin and Joseph	Pohakupu resident	August 30, 2005	Traffic, Safety, Noise, Pollution, Crime
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Ipson, Norman	Pohakupu resident (Ulupii Street)	August 15, 2005	Socio-economic
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Miller, Lynn & Peter	Pohakupu resident (Ulupii Street)	September 1, 2005	Traffic, Safety, Alternatives Analysis
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Miller, Lynn & Peter	Pohakupu resident (Ulupii Street)	September 2, 2005	Community Disaster Safety
Pohakapu Neighborhood: Residents, Businesses, and Landowners	Nakano, Warren	Pohakupu resident (Ulupii Street)	August 13, 2005	General, Design, Socio-economic, Traffic, Safety
Pohakapu Neighborhood: Residents, Businesses, and Landowners	O`Sullivan, Beverly	Pohakupu resident (Ulupii Street)	September 5, 2005	General, Design, Socio-economic, Traffic, Safety

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1238.6

OCT - 6 2006

Mr. Patrick Leonard, Field Supervisor
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Blvd, Room 3-122, Box 50088
Honolulu, HI 96850

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Dear Mr. Leonard:

Thank you for participating in the pre-consultation project scoping process and for your verification that no federally listed or proposed threatened or endangered species, or proposed or designated critical habitat occur on the proposed project site.

If you have any questions, please call me at 586-0400 or have you staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

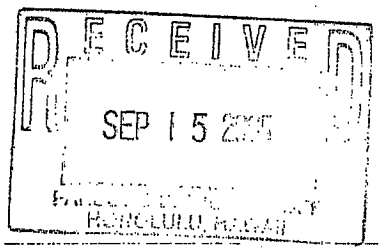
c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas, Inc.

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, Hawai'i 96850

In Reply Refer To:
1-2-2005-TA-349



SEP 14 2005

Mr. Perry Small, P.E.
Project Manager
Parsons, Brickerhoff, Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, HI 96813

Dear Mr. Small:

Thank you for your letter dated August 5, 2005, requesting a list of threatened and endangered species that may occur in the vicinity of the project area at Kailua High School on the island of O'ahu. We received your letter on August 8, 2005. The proposed project is to construct a new access road to Kailua High School. Your letter does not indicate the use of Federal funds for the project.

We reviewed the information you provided and pertinent information in our files, including data compiled by the Hawai'i Natural Heritage Program. To the best of our knowledge, no federally listed or proposed threatened or endangered species, or proposed or designated critical habitat occur on the proposed project site.

We appreciate your efforts to conserve endangered species. If you have questions, please contact Assistant Field Supervisor Gina Shultz (phone: 808/792-9400; fax: 808/792-9581).

Sincerely,

Patrick Leonard
Field Supervisor

TAKE PRIDE® IN AMERICA

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1237.6

OCT - 6 2006

Mr. George Young, Chief
Regulatory Branch, Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440.

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA)
Chapter 343 Pre-Consultation Process

Dear Mr. Young:

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your September 7, 2005 letter are as follows:

1. The blue line "labeled as a pipeline" on the 1983 map, is actually labeled as a "tunnel/ditch line," and contains a cement jacket which once housed a pipeline that flowed from a pumping station on Kawai Nui Marsh, over Keaniani Ridge, and into Waimanalo Sugar Plantation. While there are some exposed areas of collapsed tunnel, most of the feature appears to be unexposed. In the event the road will cross the "tunnel/ditch," any exposed conduit will be plugged to prevent the potential for stormwater transmission and potential migration of construction-related silt runoff to Kawai Nui Marsh.

2. There are no known wetlands or water bodies within the project site, but there appears to be a natural artesian spring adjacent to the site, at the base of the hill next to the Women's Community Correctional Center. The proposed road will be positioned well above the springs. Best management practices will be employed during construction to prevent any negative impact to the springs.

3. A copy of the EA will be provided to your office. Our responses to your comments along with the EA should provide sufficient information for you to determine whether a Department of the Army permit is required.

If your have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

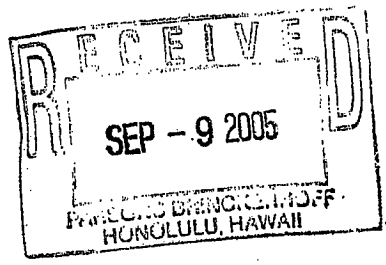
RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

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

REPLY TO
ATTENTION OF

September 7, 2005



Regulatory Branch

Perry Small, P.E.
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

File No. **POH-2005-449**

This responds to your request, on behalf of the State of Hawaii Department of Accounting and General Services (DAGS) for review of your notice of preparation of Draft Environmental Assessment (EA) for the Kailua High School Proposed New Access Road, Kailua, Oahu, Hawaii (TMK 9-4-2-003:004). We have reviewed the project information you provided, and additional information provided by Mr. Alex Buttara via telephone to Mr. Peter Galloway of my staff on September 2 and 6, 2005, with respect to the Corps' authority to issue Department of the Army permits under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344).

The project consists of constructing an alternative access road to the high school to alleviate traffic in the Kailua neighborhood of Pohakupu. The road would extend from Kalanianaole Highway, through the Women's Community Correctional center site, to the back of the school.

The proposed road would cross a feature which is shown as a solid blue line on the 1983 U.S. Geological Survey Mokapu quadrangle map. This feature appears to empty into Kahanaiki Stream within Kawainui Marsh. Although the blue line is labeled as a pipeline on the 1983 map, Mr. Buttara stated via telephone that an archaeologist's field observation indicates it may be an open ditch. The EA should identify this feature and describe any work proposed where it would be crossed by the proposed road. The EA should also state whether there are any wetlands or other water bodies within the project site. We can provide a determination of DA permit requirements when we receive this information.

Should you have questions concerning this response, please contact Mr. Galloway via e-mail (*peter.c.galloway@usace.army.mil*), by telephone at 438-8416, or by fax at 438-4060. Written inquiries should cite our file number and can be sent to: Regulatory Branch (CEPOH-EC-R/P. Galloway); U.S. Army Engineer District, Honolulu; Building 230; Fort Shafter, Hawaii 96858-5440.

Sincerely,

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

LINDA LINGLE
GOVERNOR

STEPHANIE AVEIRO
EXECUTIVE DIRECTOR

PAMELA Y. DODSON
EXECUTIVE ASSISTANT

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
HOUSING AND COMMUNITY DEVELOPMENT CORPORATION OF HAWAII
677 QUEEN STREET, SUITE 300
Honolulu, Hawaii 96813
FAX: (808) 587-0600

IN REPLY REFER TO:
05:PEO/146

August 22, 2005

RECEIVED
AUG 30 2005
HONOLULU, HAWAII

Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Re: Chapter 343 Pre-Consultation for the Kailua High School Proposed New Access Road

The Department of Human Services forwarded a copy of the pre-consultation letter for the Kailua High School proposed new access road for review and comment.

The Housing and Community Development Corporation of Hawaii administers Chapter 111, Hawaii Revised Statutes relating to assistance to displaced persons. If applicable, please address displacement and relocation in the draft Environmental Assessment.

Thank you for the opportunity to comment.

Sincerely,

Stephanie Aveiro

Stephanie Aveiro
Executive Director

c: Lillian B. Koller, Esq.
Department of Human Services

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1240.6

OCT - 6 2006

MEMORANDUM

TO: The Honorable Patricia Hamamoto, Superintendent
Department of Education

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your September 1, 2005 letter are as follows:

1. We acknowledge your objection to the use of "alternative" access road to describe the project. "Additional" or "new" access road will be used in future documents and correspondence.

2. In order to meet the requirement of significantly reducing vehicular traffic in the Pohakupu neighborhood, the traffic consultant proposed that modifications be made to the present access for Kailua High School. These modifications need not exclude the school's Ulumanu Drive main entry gate in its entirety. This strategy will be discussed and evaluated further in the EA. The Department of Education's and school's opposition to any such scenario will be taken into consideration and noted in the EA.

3. The "preferred alternative" is determined during the planning and environmental review process. The preferred alternative is undecided at this point in time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

JE 7/20 COMPTROLLER'S OFFICE DAGS
2005 JUL 19 P 2:02

7/20 PWD RECEIVED - DAGS DIV. OF PUBLIC WORKS
2005 JUL 20 A 11:20

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

DIVISION OF PUBLIC WORKS

TO:	FOR:	INITIAL:
PW Adm	Approval	
PW Sec	Signature	
Staff Svcs Br	Information	
Planning Br	Draft Ltr	
Proj Mgmt Br	See Me	
Design Br	Comments	
Inspec Br	Investigate & Report	
Qual Cont Br		
Leasing Br		

7/20/05

RECEIVED
JUL 20 2005
DAGS OFFICE OF PUBLIC WORKS

July 20, 2005

MEMO TO: The Honorable Russ K. Saito, Comptroller
Department of Accounting and General Services

F R O M: Patricia Hamamoto, Superintendent
Department of Education

SUBJECT: Kailua High School New Access Road
DAGS Job No. 12-10-0375

The Department of Education (DOE) is responding to your June 8, 2005, letter concerning ownership of a proposed new road to Kailua High School. The DOE is unwilling to accept ownership of the new road. We are not interested in assuming any responsibility for the maintenance of the road or any liability for the road. Kailua High School, by itself, has no resources to accept any additional responsibility for a new road.

If you have any questions, please call Rae Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities Development Branch at 733-4862.

PH:HM:hy

cc: Rae Loui, Asst. Supt., OBS
Louise Wolcott, Ed.D., CAS, Kailua/ Kalaheo Complex Area
Francine Honda, Principal, Kailua High School

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

RECEIVED
SEP - 2 2005
HONOLULU, HAWAII

September 1, 2005

Mr. Perry Small, Project Manager
Parsons Brinkerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Early Consultation on Kailua High School
Additional Access Road, Kailua, Oahu, TMK: 9-4-2:003

The Department of Education (DOE) is responding to your request for any issues or concerns regarding an additional access road to Kailua High School (KHS). The DOE strongly objects to the shifting of this study from a study of an additional access road to what you refer to as an "alternative access road." There was nothing in the originating legislation that ever referred to a study of an access road to the exclusion of any other current access to KHS. The DOE opposes such an idea, which is entirely beyond the scope of the study, and we will continue to object to its consideration.

Your letter states that "It is anticipated that after project construction, most traffic would access the school directly from Kalanianaole Highway instead of passing through the Pohakupu subdivision." The Draft Environmental Assessment (DEA) will have to identify exactly who is doing the anticipating since there has never been any formal discussion of closing the present Ulumanu Drive entrance to the school.

It will be necessary for the DEA to fully disclose who proposed the closing of the Ulumanu entrance and why. The DEA will also need to have a detailed discussion of the full impact of such a closure as one of many options. The discussion must include the reaction of the DOE personnel at Kailua High School, DOE engineers and architects, and DOE safety and security personnel.

All schools are designed with safety and security measures clearly in mind. To arbitrarily shift the main entrance of the school to the back reaches of the campus negates all of those design accommodations. In addition, the shifting of the entrance of a school changes traffic patterns within the campus which would jeopardize how pedestrians cross the campus.

It seems extremely peculiar that a consultant seeking consultation prior to drafting a DEA is already describing the project in terms that indicate a preferred outcome with anticipated results.

The DOE appreciates the opportunity to offer early comments on your proposed plans. If you have any questions, please call Rae Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities Development Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:hy

c: Rae Loui, Asst. Supt., OBS
Louise Wolcott, CAS, Kailua/Kalaheo Complex Area
Francine Honda, Principal, Kailua High School
Ernest Y.W. Lau, DAGS
Duane Kashiwai, FDB

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1241.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Calvin Sunada, Head
Environmental Planning Office
Department of Health

ATTN: Mr. Jiacai Liu
Land Use Review Coordinator

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 22, 2005 e-mail, we have reviewed the information provided on your department's web site and will incorporate the relevant items in the EA and planning process.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parson Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Jiacai Liu [JLiu@eha.health.state.hi.us]
Sent: Monday, August 22, 2005 3:24 PM
To: Buttaro, Benjamin
Subject: Pre-assessment Consultation Re: Kailua High School Proposed New Access Road

Dear Mr. Buttaro:

Thank you for allowing us to review the subject project. We offer Standard Comments at:http://www.state.hi.us/health/environmental/env- planning/landuse/landuse.html or clicking (Standard Comments) for pre-assessment consultation. We are looking forward to seeing the DEA and please send the document to our office at:

Environmental Planning Office
Department of Health
919 Ala Moana Blvd., Room 312
Honolulu, Hawaii 96814

Thank you.

Jiacai Liu
Land Use Review Coordinator
Environmental Planning Office /DOH
(808) 586-4346

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1239.6

OCT - 6 2006

Mr. Todd E. Hendricks, Project Coordinator
Imu/Air Riflery Roof Construction Project
328 Kihapai Street
Kailua, HI 96734

Dear Mr. Hendricks:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 31, 2005 letter, we recognize that the Imu Program plays an important role in the cultural and environmental education of students, and it is a major concern of the school and community to preserve and protect the Imu site and surrounding structures. Accordingly, the proposed new access road will be carefully planned, designed and constructed so as not to impact the Imu Program or remove any existing buildings, grounds, or facilities on the Kailua High School campus.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

RECEIVED
SEP - 1 2005
HONOLULU, HAWAII

August 31, 2005

Perry Small, P.E.
Project Manager
Parsons, Brinckerhoff, Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small,

I would like to provide comments/input on the Kailua High School Proposed New Access Road project. I taught science at Kailua High School for 28 years and have been retired for one year now. As part of our Marine Science Program, I ran a boating program and am continuing to run an imu program for the school. The imu site is in the corner of the baseball field adjacent to the JAFROTC Building. The imu is a permanent structure which boarders the Kailua High fence line in that area. For the past 10 years, we have been using the imu for fundraising to support the various programs at the school.

A large segment of the Windward community participates in our imu program. In fact, people from all parts of Oahu bring their food to be cooked in our imu. An example is our Thanksgiving imu, for which we take in a maximum of 400 trays of food to be cooked overnight for a nominal fee. On Thanksgiving morning, anywhere from 800-1000 people come on campus to pick up their cooked food. Throughout the year we have smaller imus for the various school organizations on campus to help in their fundraising efforts.

For the past year, we have been working very hard to construct a roof over our imu and the adjoining 80 foot concrete slab used by us for imu set-up and by the air riflery team for rifle practice. We have received donations of labor, equipment, supplies and materials from many businesses and organizations for this roofing project. We are now in the process of completing our roofs. Pictures of the construction are enclosed.

It is my understanding from our telephone conversation that the proposed new access road will not encroach on any of the existing Kailua High School property. The imu program plays an important role in the cultural and environmental education of our students. It is therefore a major concern of the school and the community to preserve and protect the imu site and prevent any impact to the surrounding structures. Given the time and efforts that the school and the community have put to support and maintain this imu program, it is our utmost concern that the construction of the proposed new access road is carefully planned so as not to impact or remove any existing buildings, grounds or facilities on the Kailua High School campus.

I would be more than happy to show you our imu site an your convenience. I look forward to working with you on the completion of the access road in the best interests of the school and the community. I can be reached on my cell phone at 728-7389 or on my home phone at 262-0210. Again, thank you for your time and consideration.

Sincerely,

Todd E. Hendricks
Project Coordinator
Imu/Air Riflery Roof Construction Project
328 Kihapai Street
Kailua, Hawaii 96734

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1242.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Brennon T. Morioka, Deputy Director
Department of Transportation

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your September 14, 2005 letter are as follows:

1. We acknowledge the Department of Transportation's (DOT) position that the access road does not qualify for inclusion in the State Highway System.

2. We appreciate DOT's offer of its engineering services for the technical review of the traffic impact analysis report and road designs, and aid in expediting permit approvals that are required for the construction of a new signalized intersection in the State Highway rights-of-way. A copy of our traffic analysis report will be sent to you for review and we will continue to seek DOT's guidance during the planning, design and construction of the proposed new access road.

If you have any questions, please call me at 586-0400 or have your staff call Mr.Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

JEX Lin please draft EXEC SUMMARY for State Comptroller
9/27

LINDA LINGLE
GOVERNOR

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
BARRY FUKUNAGA
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

COMPTROLLER'S OFFICE
DAGS

2005 SEP 23 A 11:16

RECEIVED DAGS
OF PUBLIC WORKS

2005 SEP 26 A

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

IN REPLY REFER TO:

HWY 2.8876

September 14, 2005

RECEIVED
SEP 27 2005

TO: THE HONORABLE RUSS K. SAITO
STATE COMPTROLLER

FROM: BRENNON T. MORIOKA
DEPUTY DIRECTOR OF TRANSPORTATION

SUBJECT: KAILUA HIGH SCHOOL, PLANNING FOR NEW ACCESS ROAD, DAGS JOB NO. 12-10-0375

In response to your August 2, 2005 memorandum on the planning for the proposed access road for Kailua High School, we have reviewed the possibility of the Department of Transportation's ownership of the new road.

Our previous discussions with the Department of Education, the Department of Accounting and General Services, and the Department of Public Safety had concluded that the access road does not qualify for functional classification and inclusion in the State Highway System; therefore, State Highway Special Funds may not be used for the planning, design, construction, operation, or maintenance of the road. With this restriction, the DOT's ownership of the access road is not advisable.

DOT offers its engineering services for the technical review of the traffic impact analysis report and the road designs that are prepared in conjunction with the construction of this road. We will also facilitate the establishment of a new access point on Kalanianaole Highway and expedite the DOT's permit that is required for the construction of a new signalized intersection in the State Highway rights-of-way.

Please contact Highways Administrator Glenn M. Yasui at 587-2220 for further discussion or information related to the Kailua High School Access Road.

DIVISION OF PUBLIC WORKS

TO:	FOR:	INITIAL:
1 PW Adm	✓	Approval
PW Sec		Signature
Staff Svcs Sr		Information
2 Planning Br		You File
Proj Mgmt Br		Lse Ms
Design Br		Comments
Inspec Br		Investigate &
Qual Cont Br		Report
Leasing Br		

9/27/05

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1243.6

OCT - 6 2006

MEMORANDUM

TO: Ms. Patricia Murakami, Administrator
Benefit, Employment and Support Services Division
Department of Human Services

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 25, 2005 letter, we acknowledge that the Department of Human Services does not have any offices or facilities that would be impacted by the proposed new access road.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

LILLIAN B. KOLLER, ESQ.
DIRECTOR

HENRY OLIVA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
Benefit, Employment and Support Services Division
820 Mililani Street, Suite 606
Honolulu, Hawaii 96813

RECEIVED
AUG 31 2005
OFF
HAWAII

August 25, 2005

Refer to: 05-0740

Mr. Perry Small, P.E. Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Thank you for your letter of August 5, 2005. The Director of the Department of Human Services (DHS) has forwarded your letter to me for a response.

Our Child Care Connection Hawaii Office staff, who license Child Care facilities, have reviewed the proposal for the new access road to Kailua High School. The staff reports that the road would not pose any difficulty to the licensed facilities and homes within that proximity. In addition, we do not have any offices or facilities which would be impacted by such a plan.

Thank you for affording us the opportunity to provide comments on this proposed project. Should you have any questions or concerns, please contact Ms. Luanne Murakami, Acting Oahu Branch Administrator, at 587-3325.

Sincerely,

Patricia Murakami
Division Administrator

c: Lillian B. Koller, Esq., Director

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1244.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Clyde W. Namuo, Administrator
Office of Hawaiian Affairs

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your September 1, 2005 letter are as follows:

1. An archeological survey and cultural resource assessment will be included in the EA. A copy of the draft EA will be provided for your review and comment.

2. If Iwi or Native Hawaiian cultural or traditional deposits are found during ground disturbance, we will have work stopped and will contact the appropriate agencies pursuant to applicable law.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

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

RECEIVED
SEP - 7 2005
HONOLULU, HAWAII

HRD05/1980

September 1, 2005

Perry Small, P.E.
Parsons, Brinckerhoff, Quade & Douglas, INC.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, HI 96813

RE: Kailua High School Proposed New Access Road, Kailua, Hawaii, TMK 9-4-2-003: 004.

Dear Mr. Small,

The Office of Hawaiian Affairs (OHA) is in receipt of your August 5, 2005 request for comment on the above listed proposed project, TMK 9-4-2-003: 004. OHA offers the following comments:

The studies related to the proposed Draft Environmental Assessment (DEA) seem to address the major issues associated with the proposed road construction. Based on the results of both the cultural and archaeological findings of the study, it may be appropriate that archaeological monitoring occur during construction activities. The proposed road plans should be considered tentative as the results of the DEA may indicate that changes should be made where culturally sensitive areas, historic properties and environmentally fragile landscapes may be jeopardized by the project. Our office is looking forward to reviewing the DEA when completed.

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck at (808) 594-0239 or jessey@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1245.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Francis X. Sequeira, Warden
Women's Community Correction Center
Department of Public Safety

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your August 8, 2005 e-mail are as follows

1. The Akiohala Street access (through Enchanted Lake) to Kailua High School is not expected to provide sufficient traffic relief for the residents of the Pohakupu neighborhood. Accordingly, an additional access road is being proposed from Kalanianaole Highway, through the Women's Community Correctional Center (WCCC) site, to the back of the school. The environmental review and planning process currently underway will help determine if this is a viable proposal.

2. The Department of Accounting and General Services has agreed to be the responsible agency during the planning, design and construction phases of the road. The issues of ultimate ownership, road maintenance and liability remain unresolved at this time.

3. The Department of Public Safety (PSD) staff has provided some requirements (fencing, setback, etc.) to mitigate security concerns for the WCCC. These requirements will be incorporated into the planning, design and construction of the proposed new access road.

Buttaro, Benjamin

From: Francis.X.Sequeira@hawaii.gov
Sent: Monday, August 08, 2005 3:43 PM
To: Buttaro, Benjamin
Cc: John.S.Borders@hawaii.gov

Alex Buttaro of (Parsons Brinckerhoff Quade & Douglas, Inc),
Aloha, thank you for allowing me to indicate to you concerns I have with the *Kailua High School Proposed New Access Road*. The following issues need to be addressed and thoroughly explained:

- Why is the access road necessary when a fully constructed and available access road to Kailua High School already exists via Enchanted Lakes? Why go through an area that is a State Prison instead?
- Who will maintain this proposed access road? DAGS, DOE, and the City don't want the responsibility or liability.
- If the proposed access road comes to fruition, will there be a high (at least 16') fenceline along the way to the high school? Will there be additional funding to now provide staff to patrol that fenceline?
- Why are the Hawaiians being singled out just because they reside in Waimanalo and Pohakupu people and Enchanted Lake people so despise local people driving through their respective neighborhoods?
- Who will be held accountable if the access way to Kailua High School becomes a contraband drop-off and loitering area?

Mahalo for the opportunity to express our concerns.

Francis X. Sequeira
Warden
Women's Community Correctional Center

4. The purpose of this project is to relieve traffic congestion and improve safety in the Pohakupu community. No discriminatory element is intended or implied.

5. As noted above, PSD staff has provided security guidelines which we hope will prevent contraband from being thrown into WCCC. We will work with WCCC and PSD staff as the project progresses through the planning, design and construction phases to ensure that the security of the WCCC will not be compromised.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1246.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Denis R. Lau, P.E., Chief
Clean Water Branch
Environmental Management Division
Department of Health

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments in response to your August 10, 2005 letter are as follows:

1. Construction and operational activities of the proposed project are not expected to result in discharge into navigable waters. Nonetheless, we have contacted the Army Corp of Engineers to solicit their input.

2. The proposed new road is expected to require construction activities that include clearing, grading, and excavation that result in the disturbance of more than one (1) acre of total land area. Accordingly, an application for a National Pollutant Discharge Elimination System permit will be submitted.

3. We have noted your requirement to comply with the Clean Water Act, Code of Federal Regulations, and Hawaii Revised Statutes. These regulations will be reviewed to ensure that the project is in complete compliance with the applicable the applicable sections.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

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

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

RECEIVED
AUG 12 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

In reply, please refer to:
EMD / CWB

08053CEC.05

August 10, 2005

Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Kailua High School Proposed New Access Road
Kailua - Island of Oahu, Hawaii
TMKs: 9-4-002:003 and 9-4-002:004
Chapter 343 Pre-Consultation Process

Thank you for the opportunity to comment on the Draft Environmental Assessment (DEA).

As prescribed in your letter that "[T]he Department of Accounting and General Services (DAGS) is planning an alternate access road to Kailua High School to alleviate traffic in the Kailua neighborhood of Pohakupu. The road will extend from Kalanianaole Highway, through the Women's Community Correctional Center site, to the back of the school. It is anticipated that after project construction, most traffic would access the school directly from Kalanianaole Highway instead of passing through the Pohakupu subdivision. Parsons Brinckerhoff is the project consultant to DAGS..."

The following are our general comments based on the information provided in your letter of August 5, 2005, we reserve the right to provide additional comments when the DEA becomes available:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 for this project. Pursuant to Federal Water Pollution Control Act (commonly known as the "Clean Water Act" (CWA)), Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40, Code of Federal Regulations (CFR), Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

2. In accordance with HAR, Sections 11-55-04 and 11-55-34.05, the Director of Health may require the submittal of an individual permit application or a Notice of Intent (NOI) for a permit coverage authorized under the National Pollutant Discharge Elimination System (NPDES):

   a. An application for an NPDES individual permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

   b. An NOI to be covered by an NPDES general permit is to be submitted at least 30 days before the commencement of the respective activity. A separate NOI is needed for coverage under each NPDES general permit. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

      i. Storm water associated with industrial activities, as defined in Title 40, CFR, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi). [HAR, Chapter 11-55, Appendix B]

      ii. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.** [HAR, Chapter 11-55, Appendix C]

      iii. Discharges of treated effluent from leaking underground storage tank remedial activities. [HAR, Chapter 11-55, Appendix D]

      iv. Discharges of once through cooling water less than one (1) million gallons per day. [HAR, Chapter 11-55, Appendix E]

      v. Discharges of hydrotesting water. [HAR, Chapter 11-55, Appendix F]

      vi. Discharges of construction dewatering effluent. [HAR, Chapter 11-55, Appendix G]

      vii. Discharges of treated effluent from petroleum bulk stations and terminals, [HAR, Chapter 11-55, Appendix H]

viii. Discharges of treated effluent from well drilling activities. [HAR, Chapter 11-55, Appendix I]

ix. Discharges of treated effluent from recycled water distribution systems. [HAR, Chapter 11-55, Appendix J]

x. Discharges of storm water from a small municipal separate storm sewer system. [HAR, Chapter 11-55, Appendix K]

xi. Discharges of circulation water from decorative ponds or tanks. [HAR, Chapter 11-55, Appendix L]

3. In accordance with HAR, Section 11-55-38, the applicant for an NPDES permit is required to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the Department of Health that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD.

4. Any discharges related to project construction or operation activities, with or without a Section 401 WQC or NPDES permit coverage, shall comply with the applicable State Water Quality Standards as specified in HAR, Chapter 11-54.

5. The Hawaii Revised Statutes, Subsection 342D-50(a) requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this chapter, or a permit or variance issued by the director."

If you have any questions, please contact Mr. Alec Wong, Supervisor of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

EC:np

c: Regulatory Branch, FED, COE
Ms. Wendy Wiltse, PICO, EPA, Region 9
EPO, DOH

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1247.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Laurence K. Lau, Deputy Director
Environmental Health Administration
Department of Health

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments in response to your August 15, 2005 letter are as follows:

1. A Phase 1 Environmental Site Assessment (ESA) has been conducted for the proposed project and no contamination was detected.

2. Past uses of the project land appears to be limited to cattle grazing and have not included sugarcane cultivation. Therefore, the land is not expected to be at risk for arsenic contamination.

3. As mentioned above, an ESA was completed for the subject project and no contaminants were detected. A copy of the ESA will be submitted to the Hazard Evaluation and Emergency Response Office for their evaluation and a letter of "No Further Action" will be requested.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File: EHA/HEER Office
2005-418 KHS

RECEIVED
SEP 12 2005
HONOLULU, HAWAII

August 15, 2005

Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, HI 96813

Subject: Kailua High School Proposed New Access Road
Kailua, Oahu, Hawaii, TMK: 9-4-2-003:004
Chapter 343 Pre-Consultation Process

Dear Mr. Small:

Thank you for allowing us to review and comment on this project. We provide the following comments:

1. A Phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

2. All lands formerly in the production of sugarcane should be characterized for arsenic contamination. If arsenic is detected above the U.S. Environmental Protection Agency Region 9 preliminary remediation goal (PRG) for non-cancer effects, then a removal and or remedial plan must be submitted to the HEER Office for approval. The plan must comply with Chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.

3. If the land has a history of previous releases of petroleum, hazardous substances, pollutants, or contaminants, we recommend that the applicant request a

"No Further Action" (NFA) letter from the Hawaii State Department of Health Hazard Evaluation and Emergency Response Office prior to the approval of the land use change or permit approval.

Sincerely Yours,

for Laurence K. Lau, Esq.
Deputy Director for Environmental Health

C: Ernest Y. W. Lau, Department of Accounting and General Services

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1248.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Daniel S. Quinn, Administrator
Division of State Parks
Department of Land and Natural Resources

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments in response to your August 30, 2005 letter are as follows:

1. The project should not directly impact the Ulup Heiau State Historical Park and Kawai Nui Park Reserve. However, there is a historic irrigation feature in the project site. This feature contains a cement "jacket" which once housed a pipeline that flowed from a pumping station on Kawai Nui Marsh, over Keaniani Ridge, and into Waimanalo Sugar Plantation. While the jacket is exposed in some areas most of the pipeline appears to be underground. In the event the road will cross the jacket, any exposed portions will be plugged to prevent the potential for stormwater transmission and migration of construction related silt runoff into Kawai Nui Marsh.

2. There are no known wetlands or water bodies within the project site, but there appears to be a natural artesian spring directly adjacent to the site, at the base of the hill next to the Women's Community Correctional Center. The road will be positioned well above the spring. Best management practices will be employed during construction to prevent any negative impact to the spring.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 30, 2005

RECEIVED
SEP - 1 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

Mr. Perry Small, Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawai'i 96813

Dear Mr. Small:

SUBJECT: Kailua High School Proposed New Access Road
Kailua Ahupua'a, Ko'olaupoko, O'ahu TMK: 4-2-03: 04

Thank you for the opportunity to comment on the proposed access road to Kailua High School. The road will run from Kalaniana'ole Highway, through the Women's Community Correctional Center, and east of the Pōhakupu subdivision.

Two State Parks are located to the west of the general project area – Ulupō Heiau State Historical Park and the Kawai Nui State Park Reserve (map enclosed). We do not have expect the proposed road to have a direct impact on these parks, but we would like to request your consideration of the drainage pattern in the project area which could have an indirect impact. There is a culvert that runs under Kailua Road, which channels water from the storm drains in the Pōhakupu subdivision to a ditch alongside Ulupō Heiau. This water eventually enters Kawai Nui Marsh. There remains some uncertainty about other sources of water outside the Pōhakupu subdivision that may be entering this drainage system.

In addition, there are a number of springs on the slopes above Kawai Nui Marsh. Water from these springs is used to irrigate the *lo'i kalo* (taro patches) around Ulupō Heiau. Therefore, your studies should address any impacts the roadway may have on the water quality of these water sources and the existing drainage.

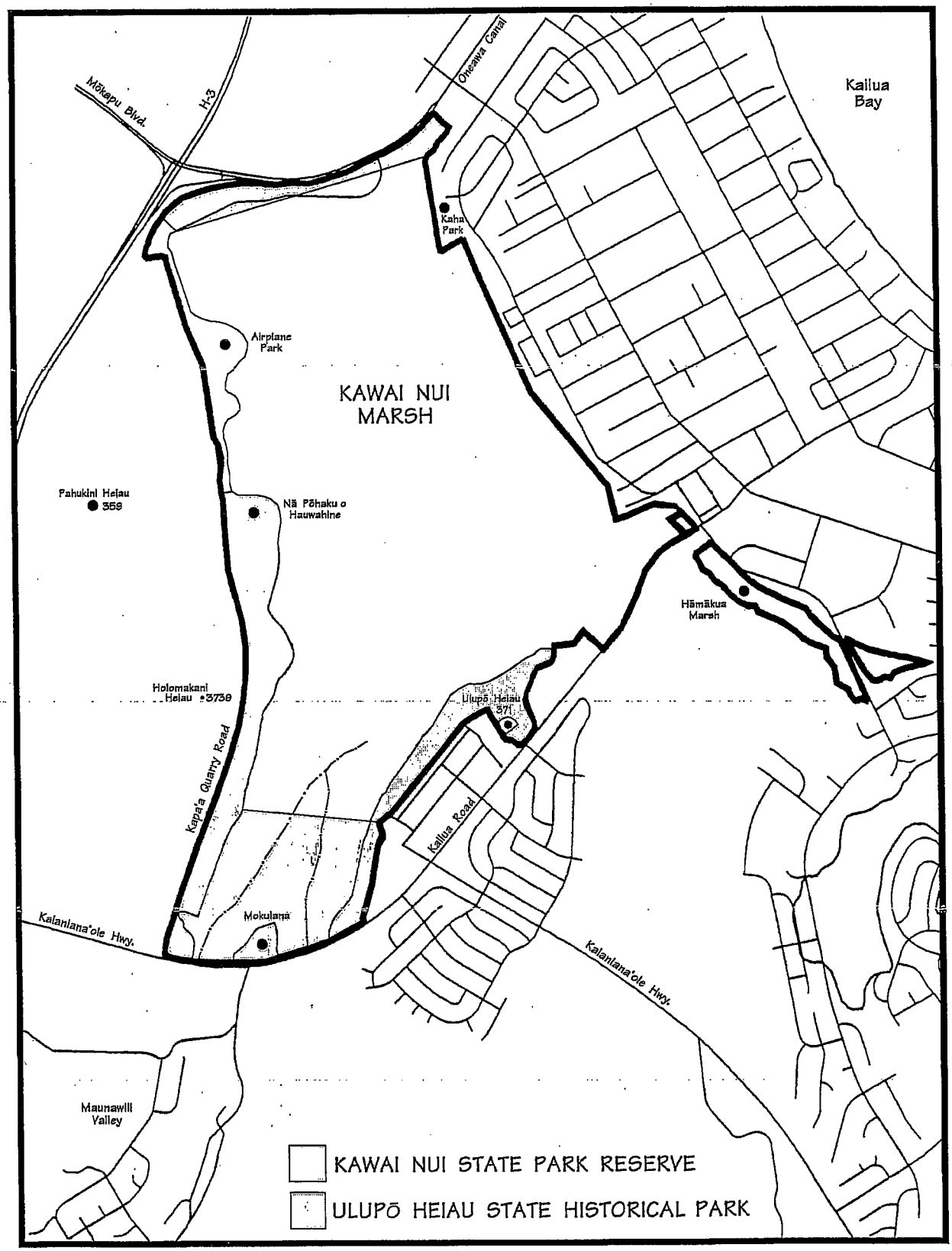
If we can be of any assistance with your project, please feel free to contact Martha Yent at 587-0287 or Martha.E.Yent@hawaii.gov

Very truly yours,

DANIEL S. QUINN
State Parks Administrator

Enclsoure

cc: Kailua Hawaiian Civic Club
Charles Burrows, 'Ahahui Mālama I Ka Lōkahi


Mōkapu Blvd.
H-3
Oneawa Canal
Kailua Bay
Kaha Park
Airplane Park
KAWAI NUI MARSH
Pahukini Heiau 359
Nā Pōhaku o Hauwahine
Hāmākua Marsh
Holomakani Heiau 3738
Ulupō Heiau 371
Kapa'a Quarry Road
Kailua Road
Kalanianaʻole Hwy.
Mokulana
Kalanianaʻole Hwy.
Maunawili Valley
KAWAI NUI STATE PARK RESERVE
ULUPŌ HEIAU STATE HISTORICAL PARK

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1249.6

OCT - 6 2006

MEMORANDUM

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
Department of Health

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 15, 2005 letter, we have consulted with, and will continue to consult the neighborhood boards and community organizations on an ongoing basis to ensure the appropriate level of community involvement.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

RECEIVED
AUG 16 2005
HONOLULU, HAWAII

August 15, 2005

Mr. Perry Small
Parsons Brinckerhoff
1001 Bishop St. Suite 2400
Honolulu, HI 96813

Subject: Kailua High School New Access Road, Kailua, Oahu
Pre-consultation

Dear Mr. Small:

We have received your letter dated August 5, 2005 on the proposed Kailua high school new access road. Please consult with the neighborhood to be effected.

We have no other comments to offer at this time. We will reserve further comments when the documents are submitted. Thank you for the opportunity to review your request. Should you have any questions, please feel free to contact our office at 586-4185.

Sincerely,

Genevieve Salmonson

Genevieve Salmonson
Director

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1250.6

OCT - 6 2006

MEMORANDUM

TO: Mr. Edward T. Teixeira, Vice Director
Office of the Director of Defense
Department of Defense

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 25, 2005 letter, we acknowledge your comment that the existing mechanical warning siren at the Hawaii Youth Correctional Facility provides adequate coverage for the subject project.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

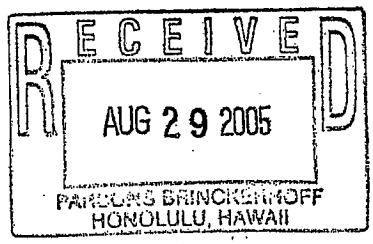




PHONE (808) 733-4300
FAX (808) 733-4287

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE DIRECTOR OF CIVIL DEFENSE
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

August 25, 2005



Mr. Perry Small, P.E., Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Kailua High School Proposed New Access Road
Tax Map Key: 9-4-2-003:004

We appreciate the opportunity to comment on the pre-consultation process for Kailua High School's proposed new access road in Kailua, Oahu, Hawaii.

There is an existing mechanical siren adjacent to the Hawaii Youth Correctional Facility that provides adequate coverage for this project.

Please have your staff call Mr. Norman Ogasawara, State Civil Defense, at 733-4300, ext. 531, if there are any questions.

Sincerely,

EDWARD T. TEIXEIRA
Vice Director of Civil Defense

c: Oahu Civil Defense Agency
Radio Shop, State Civil Defense

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1252.6

OCT - 6 2006

MEMORANDUM

TO: Ms. Patti Miyamoto, Interim Executive Director
Department of Human Services
Hawaii Public Housing Authority

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 22, 2005 letter, we confirm that no displacements or relocations are anticipated for the proposed project.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
LAWRENCE H. MIIKE, M.D., J.D.
STEPHANIE A. WHALEN

DEAN A. NAKANO
ACTING DEPUTY DIRECTOR

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

SEP 15 2005

RECEIVED
SEP 16 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

Mr. Perry Small, P.E.
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Kailua High School Proposed New Access Road
TMK: 9-4-2-003:004

Thank you for your August 5, 2005 letter requesting whether a stream channel alteration permit would be required for constructing the proposed new access road.

A site visit revealed there was a dry unnamed watercourse located east of the proposed new access road. This watercourse does not support instream uses. Therefore, a stream channel alteration permit pursuant to Hawaii Revised Statutes §17C-71 will not be required.

Please be advised that the roadway may require other agency approvals regarding wetlands, water quality, grading, stockpiling and floodways. This letter does not constitute or imply compliance with other federal, state or county rules.

Thank you for your inquiry. We apologize for the delay in responding to you. If you have any questions regarding this letter, please call David Higa at 587-0249.

Sincerely,

for: DEAN A. NAKANO
Acting Deputy Director

c: Department of Accounting and General Services

DISABILITY AND COMMUNICATION ACCESS BOARD

919 Ala Moana Boulevard, Room 101 • Honolulu, Hawaii 96814
Ph. (808) 586-8121 (V/TDD) • Fax (808) 586-8129

September 22, 2005

RECEIVED
SEP 23 2005

Mr. Perry Small, P.E.
Parsons Brinkerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street
Suite 2400
Honolulu, HI 96813

Subject: Preparation of a Draft Environmental Assessment
Kailua High School Proposed New Access Road
Kailua, Oahu, Hawaii, Tax Map Key: 9-4-2-003:004
HRS §343-5 Applicability and Requirements.

Dear Mr. Small,

A notice that a Draft Environmental Assessment (EA) being prepared for an alternative access road to Kailua High School has been submitted to our office for comment. The purpose of the notice is to request assistance in identifying key issues that should be addressed in the Draft Environmental Assessment (EA) to ensure pedestrian accessibility for persons with disabilities is taken into account.

Current studies underway state that the purpose of and need for this proposed action is to direct vehicular traffic directly from Kalanianaole Highway instead of passing through the Pohakupu subdivision. The topics of the study currently underway are:

- Topographic Mapping
- Existence of Hazardous Materials
- Archeological and Cultural Surveys
- Visual Impact Statement
- Noise and Traffic Studies

We offer the following comments:

1. This project falls within the scope of the Americans with Disabilities Act (ADA), Title II, covering state and local governments, and §103-50, Hawaii Revised

Statutes (HRS). There will be technical requirements impacting persons with disabilities that need to be taken into consideration during the above studies such as pedestrian accessibility along potential walkways, intersection crossings, and curb ramps. Also, §103-50 HRS contains a requirement for a review process by the Disability and Communication Access Board.

2. Although the proposed project is for the most part a vehicular route, there will be some pedestrian interaction at intersections and other locations such as potential bus stops along the proposed roadway concept. To ensure that accessibility is addressed and also for your reference, the publications listed below from the U.S. Architectural and Transportation Barriers Compliance Board (ATBCB), (1-800-USA-ABLE) can be of great value in addressing these accessibility concerns:

   A. "Americans with Disabilities Act Accessibility Guidelines" (ADAAG) Section 1-10, published September 1994.

   B. "Building a True Community – Final Report – Public Rights-of-Way Access Advisory Committee," published January 10, 2001.

   C. 36 CFR Parts 1190 and 1191 Part II "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Architectural Barriers Act (ABA) Accessibility Guidelines; Final Rule," published July 23, 2004.

3. We suggest you provide a general accessibility statement below in the final master plan for the Kailua High School Proposed New Access Road:

   "All facilities will be designed to meet the requirements of the Americans with Disabilities Act and the requirements of §103-50 Hawaii Revised Statutes, and to incorporate the best design practices as noted in the U.S. Architectural and Transportation Barriers Compliance Board's 'Building a True Community – Final Report – Public Rights-of-Way Access Advisory Committee' published January 10, 2001 and the 36 CFR Parts 1190 and 1191 Part II 'Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Architectural Barriers Act (ABA) Accessibility Guidelines; Final Rule' published July 23, 2004."

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1228.6

OCT - 6 2006

Mr. William D. Balflour, Jr., Acting Administrator
Oahu Civil Defense Agency
City and County of Honolulu
650 South King St.
Honolulu, HI 96813

Dear Mr. Balflour:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review. We have received of your August 22, 2005 letter and acknowledge that you have no comments at this time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

OAHU CIVIL DEFENSE AGENCY
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

RECEIVED
AUG 23 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

Mufi Hannemann
MAYOR

William D. Balfour, Jr.
ACTING ADMINISTRATOR

August 22, 2005

Mr. Perry Small, P.E.
Project Manager
Parsons, Brinkerhoff, Quade,
and Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Perry:

RE: Kailua High School Proposed New Access Road
Kailua, Oahu, Hawaii. Tax Map Key: 9-4-2-003:004
Chapter 343 Pre-Consultation Process

Thank you for the opportunity to review the location maps indicated for the proposed Kailua High School New Access Road. The Oahu Civil Defense Agency (OCDA) does not have any comments or questions at this time.

Sincerely,

W.D. Balfour

WILLIAM D. BALFOUR, JR.
Acting Administrator

/ms

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1229.6

OCT - 6 2006

Mr. Boisse P. Correa, Chief of Police
Police Department
801 South Beretania St.
Honolulu, HI 96813

Dear Mr. Correa:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comment. Our comments on your August 25, 2005 letter are as follows:

1. We will work closely with the Department of Public Safety and the Women's Community Correctional Center administration during the planning, design and construction of the proposed road to ensure that security of the correctional center is not compromised.

2. The planning, design and construction of the connection to Kalanianaole Highway will be coordinated with the Department of Transportation to minimize potential traffic hazards.

3. We note your comment that the Police Department is not aware of any major traffic problems in the Pohakupu community, exception as related to football games at the school. The intent of this project is to provide some relief from traffic congestion during the morning and afternoon peak hours, and during special events at Kailua High School. The environmental review and planning process currently underway will help in assessing the road's fulfillment of this project's objectives.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.honolulu.gov

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-KP

August 25, 2005

RECEIVED
AUG 30 2005
HONOLULU HAWAII

Mr. Perry Small, P.E., Project Manager
Parsons Brinkerhoff
Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Thank you for the opportunity to identify key issues in the environmental review process for the alternative access road for Kailua High School. We have several comments:

Security concerns for the Correctional Facility should be taken very seriously in the planning. If the road increases the danger to motorists from inmates or the likelihood of escape by inmates, then the proposed route would not be advisable.

The left turns that would be required to enter and exit the new road from the highway could lead to collisions. Also, there is a portion of the highway in that area that has a limited sight distance and needs to be taken into account in the planning. Careful engineering for the new intersection will be of critical importance.

The Honolulu Police Department is not aware of any major problems with traffic collisions or criminal activity in the Pohakupu subdivision nor are we aware of traffic flow problems with inbound or outbound traffic from Kailua High School. Football games are an exception. However, Special Duty officers are hired by the school for traffic control at those times. It may be useful to review the need for the alternative route.

If there are any questions, please call Major Susan Dowsett of District 4 at 247-2166 or Mr. Brandon Stone of the Executive Bureau at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By
KARL GODSEY
Assistant Chief of Police
Support Services Bureau

cc: Mr. Kalvin Kashimoto
University of Hawaii
Ms. Genevieve Salmonson
OEQC
Mr. George Atta
Group 70 International, Inc.

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1230.6

OCT - 6 2006

Mr. Lester K.C. Chang, Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia St., Suite 309
Kapolei, HI 96707

Dear Mr. Chang:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your September 9, 2005 letter confirming that the Department of Parks and Recreation does not have any programs or facilities that would be impacted by the proposed new access road. At your request, we will not consult with you for the balance of the environmental review process.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

DEPARTMENT OF PARKS AND RECREATION

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
PHONE: (808) 692-5561 • FAX: 692-5131 • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LESTER K. C. CHANG
DIRECTOR

DANA L. TAKAHARA-DIAS
DEPUTY DIRECTOR

September 9, 2005

RECEIVED
SEP 13 2005
HONOLULU, HAWAII

Mr. Perry Small, P.E.
Project Manager
Parsons Brinkerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Kailua High School Proposed New Access Road
Kailua, Oahu, Hawaii, Tax Map Kay: 9-4-2-003:004
Draft Environmental Assessment Consultation

Thank you for the opportunity to review and comment on Kailua High School Proposed New Access Road.

The Department of Parks and Recreation has no comment on this project and as it will not impact any program or facility of this department, you are invited to remove us as a consulted party to the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

Sincerely,

LESTER K. C. CHANG
Director

LKCC:mk
(115538)

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1231.6

OCT - 6 2006

Mr. Eugene Lee, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street., 11th Floor
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. We regret your September 8, 2005 letter stating that the City and County of Honolulu will not accept dedication of the proposed new access road. We will be calling for further discussions if, as the project progresses, changes in the circumstances make it reasonable to do so.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

DEPARTMENT OF DESIGN AND CONSTRUCTION

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
PHONE: (808) 523-4564 , FAX: (808) 523-4567
WEB SITE ADDRESS: www.co.honolulu.hi.us

MUFI HANNEMANN
MAYOR

WAYNE M. HASHIRO, P.E.
DIRECTOR

EUGENE C. LEE, P.E.
DEPUTY DIRECTOR

CDP 05-119131

September 8, 2005

RECEIVED
SEP 13 2005
HONOLULU, HAWAII

Mr. Perry Small, Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Your Letter of August 5, 2005, Relating to Kailua High School
Proposed New Access Road, TMK: 4-2-03: 4

We have reviewed the proposed project to construct a new access road and have the following comments:

The City will not accept dedication of the road. Ownership and maintenance should remain with the State.

If there are any comments, please contact Tom Miyata of the Land Division at 523-4579.

Very truly yours,

for WAYNE HASHIRO, P.E.
Director

GS:dk

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1232.6

OCT - 6 2006

Ms. Laverne Higa, Director
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia St., Suite 215
Kapolei, HI 96707

Dear Ms. Higa

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. We regret your August 16, 2005 letter stating that the City and County of Honolulu will not accept dedication of the proposed new access road and that the ownership and maintenance responsibilities rest entirely with the State. We will be calling for further discussions if, as the project progresses, changes in circumstances make it reasonable to do so.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 546-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 215, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5054 FAX: (808) 692-5857
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
DIRECTOR AND CHIEF ENGINEER

GEORGE K. MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 05-808

August 16, 2005

RECEIVED
AUG 24 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: **Kailua High School Proposed New Access Road**
Kailua, Oahu, Hawaii, Tax Map Key:9-4-2-003:004
Chapter 343 Pre-Consultation Process

In response to your request for any relevant concerns regarding the project's Draft Environmental Assessment, I wish to clarify that the ownership and maintenance responsibilities rest entirely with the State of Hawaii. See attached copy of previous correspondence to Mr. Russ Saito, State Comptroller.

Should you have any questions, please contact Larry Leopardi, Chief of the Division of Road Maintenance, at 484-7600.

Very truly yours,

Laverne Higa

LAVERNE HIGA, P.E.
Director and Chief Engineer

Attach.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING, 650 SOUTH KING STREET, 3RD FLOOR, HONOLULU, HAWAII 96813
TELEPHONE: (808)523-4529 • FAX: (808)523-4730 • INTERNET: www.co.honolulu.hi.us

MUFI HANNEMANN
MAYOR

EDWARD Y. HIRATA
DIRECTOR

DART 26112
TE-94006

May 4, 2005

Mr. Russ Saito
State Comptroller
Department of Accounting
And General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Saito:

Thank you for your letter to Mayor Hannemann regarding the Kailua High School access roadway which has been referred to the Departments of Facility Maintenance and Transportation Services for direct reply to you.

We understand that such an access would be beneficial to the students and staff of Kailua High School. However, under our stringent budget conditions and reduced staff, it would not be in the City's best interests to undertake ownership or maintenance of the proposed access. Ownership of the access would subject the City to an increased risk of liability and added maintenance and enforcement costs. The Departments of Facility Maintenance and Transportation Services view the access as a driveway that exclusively services the high school. As such, it appears that ownership should be with the State of Hawaii or the Department of Education.

We regret that the City cannot accept ownership of such an access way.

Sincerely,

LAVERNE HIGA
Director
Department of Facility Maintenance

EDWARD Y. HIRATA
Director
Department of Transportation Services

cc: Office of the Mayor

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1227.6

OCT - 6 2006

Mr. Keith S. Shida, Principal Executive
Customer Care Division
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Shida:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. As requested in your August 31, 2005 letter, we will submit the construction drawings for approval during the design phase of the project.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

BOARD OF WATER SUPPLY

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

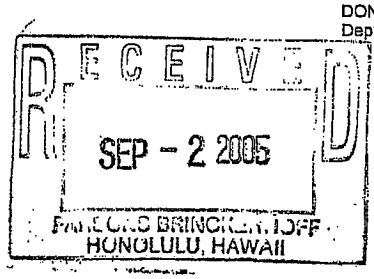
MUFI HANNEMANN, Mayor

RANDALL Y. S. CHUNG, Chairman
HERBERT S. K. KAOPUA, SR.
SAMUEL T. HATA
ALLY J. PARK

RODNEY K. HARAGA, Ex-Officio
LAVERNE HIGA, Ex-Officio

DONNA FAY K. KIYOSAKI
Deputy Manager and Chief Engineer

August 31, 2005



Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Your Letter of August 5, 2005, on the Draft Environmental Assessment for the Proposed Kailua High School Access Road, TMK: 4-2-3:4

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

The construction drawings should be submitted for approval.

If you have any questions, please contact Joseph Kaakua at 748-5442.

Very truly yours,

K. Shida

KEITH S. SHIDA
Principal Executive
Customer Care Division

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1233.6

OCT - 6 2006

Mr. Edward Y. Hirata, Director
Department of Transportation Services
City and County of Honolulu
650 South King St., 3rd Floor
Honolulu, HI 96813

Dear Mr. Hirata:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 29, 2005 letter, we have noted your recommendation that if traffic signals are to be installed, they should be connected to the Kailua Road/Kalanianaole Highway signal. We will incorporate your recommendation into the planning and design of the project, and we will also coordinate the installation of any traffic signals with the Department of Transporation.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

MUFI HANNEMANN
MAYOR

EDWARD Y. HIRATA
DIRECTOR

ALFRED A. TANAKA, P.E.
DEPUTY DIRECTOR

TP8/05-115359R

August 29, 2005

RECEIVED
AUG 30 2005

Mr. Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Kailua High School Proposed New Access Road

Thank you for your August 5, 2005 letter, requesting our comments related to the subject project. At this time, the only comment we have is that if traffic signals are to be installed, they should be connected to the Kailua Road/Kalanianaole Highway signal.

Should you have any questions regarding this matter, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

EDWARD Y. HIRATA
Director

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1234.6

OCT - 6 2006

Ms. Deborah K. Morikawa, Director
Department of Community Services
City and County of Honolulu
715 South King St., Suite 311
Honolulu, HI 96813

Dear Ms. Morikawa:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 30, 2005 letter, we acknowledge your comment that affordable and special needs housing, and any programs and services provided by the Department of Community Services will not be impacted by the proposed new road.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

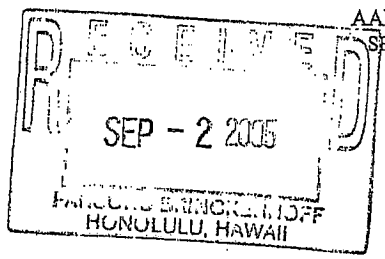
c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 • HONOLULU, HAWAII 96813 • AREA CODE 808 • PHONE: 527-5311 • FAX: 527-5498

MUFI HANNEMANN
MAYOR

DEBORAH K. MORIKAWA
DIRECTOR

AARON S. FUJIOKA
SPECIAL ADVISOR



August 30, 2005

Mr. Perry Small
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Subject: Kailua High School Proposed New Access Road
TMK 9-4-2-003:004
Chapter 343 Pre-Consultation Process

The proposed Kailua High School new access road will not have any impact on affordable and special needs housing and will not affect any of the programs and services provided by the Department of Community Services. We therefore have no comment at this time on the project.

Thank you for the opportunity to comment. Should you have any questions, please feel free to contact Mr. Randy Wong of our Community Based Development Division at 523-4435.

Sincerely,

Deborah K. Morikawa
DEBORAH K. MORIKAWA
Director

DKM:so

cc: Mr. Ernest Y.W. Lau, Department of Accounting and General Services

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1236.6

OCT - 6 2006

The Honorable Mufi Hannemann, Mayor
Office of the Mayor
City and County of Honolulu
530 South King Street, Room 300
Honolulu, Hawaii, 96813

Dear Mayor Hannemann:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation scoping process and for your review and comments. Following are our comments on your September 8, 2005 letter:

1. We acknowledge that the County considers the proposed new access road to be a driveway that serves Kailua High School and will not accept its dedication. Accordingly, the Department of Accounting and General Services will be the responsible agency during the planning, design and construction phases of the project.

2. Preliminary discussions with the Police Department indicate that they are willing to respond to emergency situations that may occur on the road. However, the issues of daily security ultimate ownership, maintenance, and liability remain unresolved at t his time.

3. The Department of Transportation Services and State Department of Transportation will continue to be consulted during the planning, design and construction phases of the project. Neighborhood boards, area residents, businesses, emergency services, bus personnel and other affected parties will be kept informed throughout the environmental review process and during the various phases of the project.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

OFFICE OF THE MAYOR
CITY AND COUNTY OF HONOLULU
530 SOUTH KING STREET, ROOM 300 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4141 • FAX: (808) 527-5552

MUFI HANNEMANN
MAYOR

September 8, 2005

RECEIVED
SEP 20 2005
HONOLULU, Hawaii

Mr. Perry Small, P. E.
Parsons Brinckerhoff Quade and Douglas, Inc.
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Dear Mr. Small:

Thank your for your letter dated August 8, 2005, requesting our preliminary comments in identifying key issues relating to the preparation of a draft environmental assessment for a proposed new access road to Kailua High School.

According to the Department of Planning and Permitting (DPP), the primary concern is a determination of the functionality of the proposed new access road. Ownership and infrastructure issues arising out of the new access road appear to be related primarily to the State of Hawaii. These issues include, but are not necessarily limited to, security, maintenance, ingress and egress from Kalanianaole Highway, the Women's Community Correctional Facility, and Kailua High School. Consequently, DPP recommends that the new access road be considered a driveway, rather than a street, since the primary purpose appears to be exclusively to service Kailua High School.

According to the Department of Transportation Services (DTS), the area neighborhood board, as well as the area residents, businesses, emergency personnel, bus personnel, and other interested parties, should be kept apprised of the proposed project and the potential effects the project may have on the surrounding area. In addition, the State of Hawaii, Department of Transportation, should be consulted, as the proposed road connects with Kalanianaole Highway, a State facility. It might be beneficial to include a traffic impact study in the draft environmental assessment.

Should you have any questions or require more information, please contact Marvin Fukagawa of DPP at 527-5066 or Richard Matsuda of DTS at 527-5035.

Thank you for the opportunity to comment.

With warm regards and aloha,

Yours truly,

Mufi Hannemann
Mayor

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1216.6

OCT - 6 2006

Mr. Mike Heh
Community Project Leader
1206 Ulupii Street
Kailua HI, 96734

Dear Mr. Heh:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your September 5, 2005 e-mail, we note the six key points that you would like to be included and evaluated in the EA. The planning and environmental review process currently underway will help in assessing how the proposed new access road would resolve any of these issues.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1235.6

OCT - 6 2006

Mr. Gregory Shiu
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, HI 96843

Dear Mr. Shiu:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your September 14, 2005 e-mail are as follows:

1. We acknowledge your concern that the proposed alignment of the new road will cross two-12" and one 36" water mains. Accordingly, we ill continue to consult with the Board of Water Supply during the planning, design and construction phases of the project.

2. We will continue to coordinate the project with the Board of Water Supply to ensure that the existing Easement 2 is not affected.

3. The proposed new road is not anticipated to affect the existing Board of Water Supply service road.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

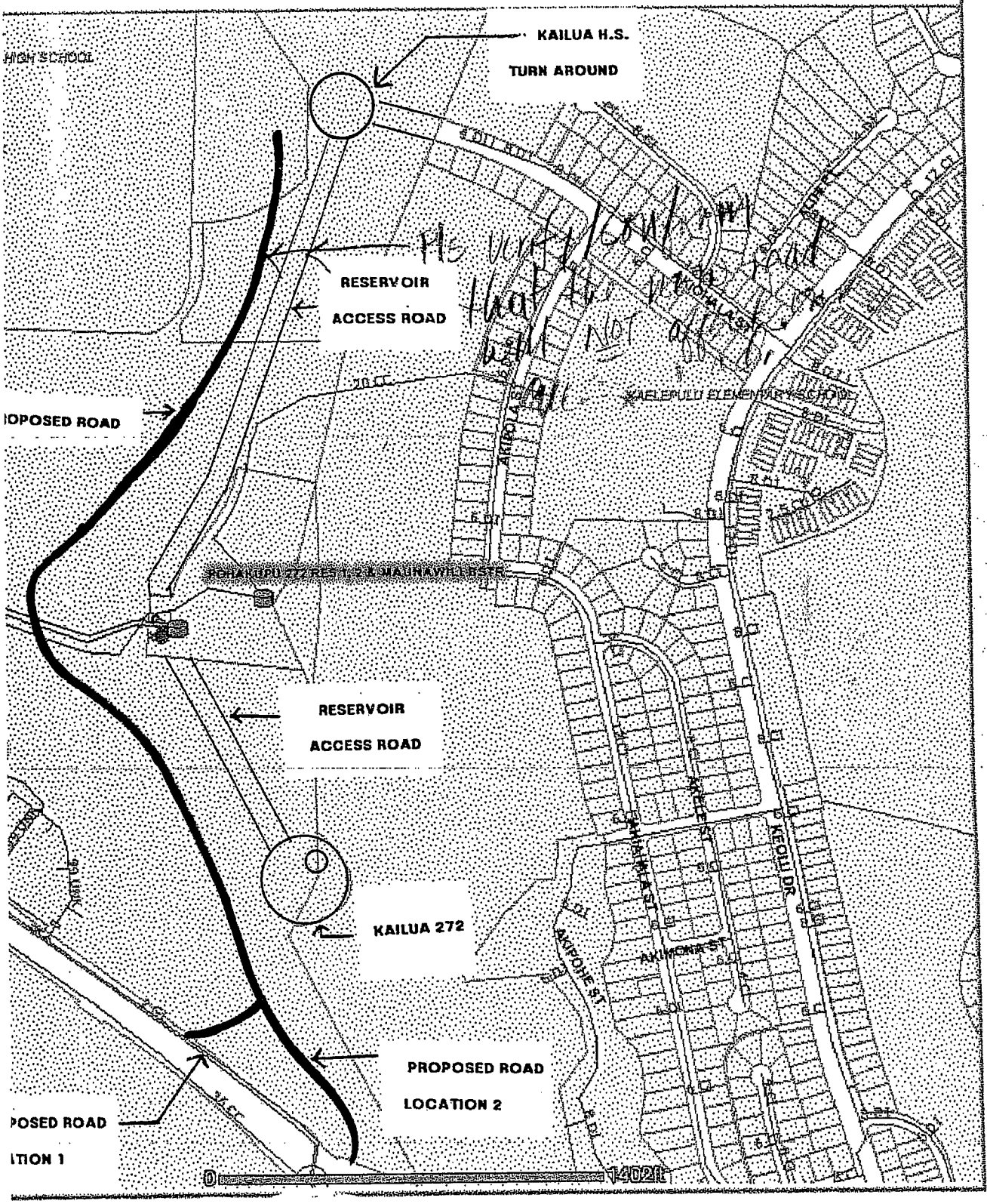
From: GREGORY SHIU [GSHIU@hbws.org]
Sent: Wednesday, September 14, 2005 10:37 AM
To: Buttaro, Benjamin
Subject: Kailua High School Proposed New Road

Alex
I am sorry that it was late. I am still waiting for other division's input.
Here are some of our concerns as I received:
1) Concerned with the existing flowage path from our reservoir that may cross this road. This road will cross two-12" and one 36" main from our reservoir site. (By BWS Operations)
2) The proposed alternate road does not encroach BWS's properties; however, it crosses over our water pipeline easement 2, which was granted to us by the State of Hawaii, by Executive Order No. 3490. (Same concern as #1, by BWS Land Section)
3) Please verify/conform that the new road will not affect our access road. (By BWS Operations-Field)
If you have any question, please email me.
Greg Shiu

Gregory Shiu
Email: gshiu@hbws.org
Phone (808) 748-5751
Fax (808) 550-5065



272 & KAILUA 272



NOT TO SCALE

AUG 1 5 2005

Honolulu Board of Water Supply

LOG NO.: 2005 17

TMK:

to
from
subject

___ A. ASANO X Operations

X KALIHI - FIELD X K. SHIDA

X B. USAGAWA X EDWARD CORREA JR.

for HOWARD H. TANAKA, CAPITAL PROJECTS DIVISION

Kailua High School Proposed New Access Road

Kailua, Oahu, Hawaii

date August 11, 2005

ATTENTION:

ATTACHED IS ~~(ARE)~~ One SET(~~S~~) OF:

___ PLANS/PRINTS ___ REVISED X COPY OF LETTER ___ CONNECTION SCHEDULE

___ CHECKSETS ___ SPECS X OTHER Sketch

X FOR YOUR X REVIEW X COMMENTS X RECOMMENDATIONS

___ FOR YOUR REVIEW OF SERVICE LATERALS

___ FOR YOUR ___ USE ___ INFORMATION ___ FILES

___ FOR YOUR NECESSARY ACTION AND REPLY

___ OTHER

REMARKS: The Department of Accounting and General Services (DAGS) is planning an alternative access road to Kailua High School. The road will extend from Kalanianaole Highway, through the Women's Community Correctional Center site, to the back of Kailua High School. Their consultant is preparing the Draft Environmental Assessment (EA) and needs to identify any key issues that should be addressed in the EA and environmental review process. Please provide your comments and concerns.

PLEASE REPLY BY August 26, 2005

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT Gregory Shiu AT EXT. 5751

ATTACHMENTS

GS [initials]

INITIALS

REPLY/COMMENTS

FROM: DANIEL MASUNO

DATE: 8/26/05

Can our access road to the Pohakupu 272' Reservoirs be connected to this new road and eliminate our current access from the Kailua H.S. Turn Around? We are also concerned with the existing flowage path from our reservoir that may cross this road. We would also want noted that this road will cross two-12" and one-36" main from our reservoir site.

[signature]

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

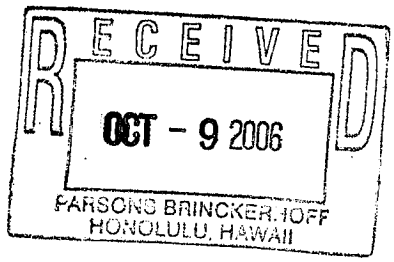
KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1215.6

OCT - 6 2006



Ms. Kathy Bryant-Hunter, Chair
Ms. Debbi Glanstein, Legislative Liaison
Kailua Neighborhood Board No. 31
P.O. Box 487
Kailua, HI 96734

Dear Ms. Bryant-Hunter and Ms. Glanstein:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your August 23, 2005 e-mail are as follows:

1. We acknowledge the Neighborhood Board's support of the project and will incorporate and evaluate your recommended issues in the EA. The planning and environmental review process which is currently underway will help in assessing and resolving the issues raised.

2. The organizations that you have identified will be included on our list of consulted parties.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

August 23, 2005

VIA E-MAIL

TO: Perry Small
Parsons Brickerhoff Quade & Douglas, Inc.
1001 Bishop Street Suite 2400
Honolulu, 96813

FR: Kathy Bryant-Hunter
Kailua Neighborhood Board

RE: Kailua High School Access Road Environmental Assessment

Dear Mr. Small:

Thank you for contacting the Kailua Neighborhood Board regarding the Kailua High School access road. The Board has been very active in supporting the community and school's efforts to build this access road. We are more than willing to provide any assistance you require as you begin the environmental assessment portion of the project. In you letter dated August 5, 2005, you requested assistance in identifying issues to be addressed in the EA. Issues that have been brought to the attention of the Board are:

- social impact/community safety for the residential area of Pohakupu when the access road is functional
- improved safety and security for residents and students in emergency situations as the High School is a designated shelter (hurricanes, homeland security, etc.)
- reduction of noise in existing residential area with the alternate route
- reduction in traffic volume in residential area and improved efficiency for students coming from Waimanalo

We would appreciate if these issues were addressed in the EA.

In addition we would like to provide the names of organizations that should also be contacted in your evaluation process:

- Hawaii Thousand Friends
- Pohakupu Community Association
- Kailua High School Alumni Association
- State Civil Defense/Homeland Security
- Waimanalo Neighborhood Board
- Castle Medical Center

Thank you for the opportunity to respond and we look forward to the draft document. If have any additional questions, please contact myself or Ms. Debbi Glanstein, Legislative Liaison for the Board.

Sincerely,

Kathy Bryant-Hunter
Chair
Kailua Neighborhood Board
262-6012

Debbi Glanstein
Legislative Liaison
Kailua Neighborhood Board
262-7381

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1217.6

OCT - 6 2006

Ms. Mary Moore, President
Olomana Community Association
328 Kihapai St.
Kailua, HI 96734

Dear Ms. Moore:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. In response to your August 29, 2005 e-mail, we acknowledge the Association's support of the project. The planning and environmental review process which is currently underway will help in assessing the merits of the proposed project.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: MaryPMoore@aol.com
Sent: Monday, August 29, 2005 10:27 AM
To: Buttaro, Benjamin
Subject: Kailua High School access road

August 29, 2005

To: Alex Buttaro
From: Mary Moore, president
Olomana Community Asso.

Our community association is strongly in favor of the planned access road from Kalanianaole Highway to Kailua High School!
The access road would remove many teen aged drivers and delivery trucks from the streets of a residential area. The road would remove many cars from a busy section of highway from the correctional facility to Castle Hospital. Cars and trucks going to the high school must now stay on the highway and they clog the lanes going to Honolulu. The many commuters from Waimanalo and Enchanted Lake would appreciate any relief from the Castle Hospital bottleneck. Olomana community would then have fewer drivers cutting through our subdivision in order to avoid the traffic light.

We are hoping this project will be completed soon!

Mahalo and aloha,
Mary Moore, 262-8512

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1251.6

OCT - 6 2006

MEMORANDUM

TO: Ms. Francine Wai, Executive Director
Disabilities and Communications Access Board
Department of Health

FROM: Russ K. Saito
State Comptroller

SUBJECT: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comment. Our comments in response to your September 22, 2005 letter are as follows:

1. We acknowledge that the project falls within the scope of the Americans with Disabilities Act (ADA) Title II, and section 103-50 of the Hawaii Revised Statutes (HRS).

2. To ensure that accessibility is addressed, we have noted and referenced the publications you have suggested from the U.S. Architectural and Transportation Barriers Compliance Board (ATBCB).

3. In compliance with your recommendation, we will include the following statement in the EA:

   "All facilities will be designed to meet the requirements of the ADA and the requirements of §103-50 Hawaii Revised Statutes, and to incorporate the best design practices as noted in the U.S. ATBCB'S Building a True Community - Final Report - Public Rights-of-Way Access Advisory Committee' published January 10, 2001 and the 36 CFR Parts 1190 and 1191 Part II 'ADA

Accessibility Guidelines for Buildings and Facilities: Architectural Barriers Act Accessibility Guidelines; Final Rule' published July 23, 2004."

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1218.6

OCT - 6 2006

Ms. Janice Wakamatsu, Co-Secretary
Kailua High School Alumni Association
P.O. Box 1221
Kailua, HI 96734

Dear Ms. Wakamatsu:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. We appreciate your forwarding our request for comment and input to the Association members and look forward to receiving their responses.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Janice Wakamatsu [jawakama@ksbe.edu]
Sent: Thursday, September 15, 2005 2:38 PM
To: Buttaro, Benjamin
Subject: Kailua High School Proposed New Access Road

Aloha,

I am responding to a letter sent to the Kailua High Alumni Association requesting comments/input to add to your Draft EA. The board members are not meeting during the month of September and our meeting will not take place until after the date that you request input.

I have forwarded a copy of your letter and map to all board members and suggested that they respond individually if they have information or an opinion they want to share with you.

Thank you for contacting us. The Association is very interested in everything that impacts Kailua High. Please keep us on your list of organizations to receive information and a copy of the study when it is complete.

Mahalo,
Janice Wakamatsu
Co-Secretary
Kailua High Alumni Association

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1226.6

OCT - 6 2006

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

Dear Mr. Calvet:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Based on your August 18, 2005 letter informing us that the Gas Company does not have any existing or future plans for underground utility gas mains in the project vicinity, we will not at your request, consult with you for the balance of the environmental review process.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

THE GAS COMPANY

RECEIVED
AUG 23 2005
PARSONS BRINCKERHOFF
HONOLULU, HAWAII

P.O. Box 3000
Honolulu, Hawaii 96802-3000

August 18, 2005

Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, Hawaii 96813

Attention: Mr. Perry Small, P.E.
Project Manager

Gentlemen:

Subject: Kailua High School Proposed New Access Road

Please be advised that The Gas Company, LLC does not have any existing or future plans for underground utility gas mains in the project vicinity. Therefore, we do not have any comments or concerns and do not need to participate in the Draft EA.

Thank you for the opportunity to comment on this proposed project. Should there be any questions, or if additional information is desired, please call me at 594-5570.

Very truly yours,

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

CEC:krs
05-127

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1219.6

OCT - 6 2006

Mr. Mark Brassfield and Ms. Char Dozier
1331 Ulupuni St.
Kailua, Hawai'i 96734-4311

Dear Mr. Brassfield and Ms. Dozier:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the pre-consultation project scoping process and for your review and comments. Our comments on your August 17, 2005 e-mail are as follows:

1. We acknowledge your concerns about the mix of pedestrians and vehicles on Ulupuni Street. The planning and environmental review process currently underway will help determine if the proposed project will improve pedestrian safety in the Pohakupu neighborhood.

2. The proposed project will not affect the setbacks on Ulupuni Street. The setbacks, or rights-of-way, are intrinsic to Ulupuni Street and are under the jurisdiction of the City and County of Honolulu.

3. Archeological and cultural surveys will be conducted in the project area to ensure that any historic or culturally significant items are not damaged or destroyed.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Char Dozier [cld2653@hawaii.rr.com]
Sent: Wednesday, August 17, 2005 3:17 PM
To: Buttaro, Benjamin
Subject: Kailua High School Proposed New Access Road

Mr. Buttaro,

FINALLY! An access road which will take the burden off Ulupuni Street! I wish you could appreciate what school mornings are like around here! The traffic is horrendous, not to mention dangerous on our street. We worry about the "elderly" residents on their walks, parents strolling their babies, as well as the children walking to Maunawili School. Sure, there are "NO RIGHT TURN" signs from Kalanianaole Hwy. on to Ulupuni Street, prior to school hours, but no one obeys them. I for one am an offender.

The new access will provide safe means of addressing this challenge. We are total in support of this project.

We do however, have a question which hopefully you can answer. When the Pohakupu subdivision was constructed, the lots on Ulupuni Street had setbacks (I believe it was 8 feet ...please don't quote me). The intent of this setback was to have the ability to make Ulupuni Street (wider 4 lanes) so it could function as an access to Kailua High School. I understand, it was also the intent to move the intermediate school to this neighborhood too.

If the new access is constructed, will it affect the setback issue...how and why?

Also, how can there be any environmental issues at hand? This entire area was "banana patch"? Archaeological and cultural surveys would prove interesting and informative.

As a member of one of the first families in Increment II of this subdivision, this was and is one (hopefully) of the safest places to grow up.

In summary, we are in total concert with having a new access to Kailua High School.

Should you have any questions or comments, please contact us.

Mahalo.

Mark Brassfield & Char Dozier

1331 Ulupuni St.
Kailua, Hawai'i 96734-4311

261-6092

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1220.6

OCT - 6 2006

Mr. Robert M. Cummings
103A Kahako Street
Kailua, HI 96734

Dear Mr. Cummings:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. Our comments on your August 30, 2005 e-mail are as follows:

1. The intent of the project is to reduce traffic and improve safety in the Pohakupu neighborhood. The scope of the project does not include reducing the bottleneck at the Kalanianaole Highway/Kailua Road intersection. We will however, pass on your suggestion for additional turning lanes to the Department of Transportation for evaluation.

2. We note your comment that a single access road to Kailua High School is preferable for security reasons. We received a similar comment from the Kailua High School administration.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Bob Cummings [BCummings@princesports.com]
Sent: Tuesday, August 30, 2005 9:23 AM
To: Buttaro, Benjamin
Subject: Proposed access road to Kailua High School

Alex:

I think another road into the school is a good idea to relieve the traffic along Kalanianaole and avert many from going through Pohakapu. However, I think a less expensive and just as effective way would also be to create three lanes just before Pohakapu down to Castle Hospital. There is room to expand the road on both sides of the highway.

Most of the traffic (two Lanes) is going into Honolulu making a left at the light by the hospital. This is why there is a bottleneck there. An additional lane on the right would be for those trying to get to the High School, other schools and not to mention those that want to get into Kailua Town. My daughter goes to Le Jardin Preschool and I can't tell you how many mornings last year I sat in traffic backed up from Boy's Home thinking that they should have another lane for those going in the direction of Kailua Town. I am dreading this Thursday which is the first day of school! With an additional lane on the right, you would have a flowing traffic lane going toward the schools and less people tempted going through Pohakapu. Additionally, I think that one road into the school will also be easier to control security wise...hope this helps.

Aloha,

Robert M. Cummings
103A Kahako Street
Kailua, HI 96734

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1221.6

OCT - 6 2006

Robin and Joseph Dwight
1295 Ulupii St.
Kailua, HI 96734

Dear Robin and Joseph Dwight:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. In response to your August 30, 2005 letter, we acknowledge your concerns about the mix of pedestrians and vehicles in the Pohakupu neighborhood. The planning and environmental review process currently underway will help determine if the proposed project will improve safety in neighborhood.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

RECEIVED
SEP - 1 2005
HONOLULU, HAWAII

August 30, 2005

Alex Buttaro
Parsons Brinkerhoff Quade & Douglas
1001 Bishop Street Suite 2400
Honolulu, HI 96813

Re: Kailua High School Proposed Access Road

The Pohakupu Community is one of only a few neighborhoods that provides access to a high school via community roads. There are many elementary school children walking these roads and dodging high school traffic in order to get to Maunawili Elementary School. Over the years speeding high school students have seriously injured children. This is a dangerous mix of walking elementary school children and driving high school children.....it does not work. Our neighborhood has been seriously impacted by increased traffic, noise, crime and pollution. As a resident of this community for the past 35 years I have watched the negative impact on this community continue to grow.

The new access road is a major safety issue for Pohakupu's residents and will improve our quality of life by removing hundreds of cars, trucks and bus traffic that travel on narrow Pohakupu streets every day. The access road will provide a direct route to Kailua High School for students from Waimanalo, Enchanted Lakes, and Keolu Hills decreasing traffic and creating fewer cars on Kalanianiole Highway during peak traffic.

Please take these concerns into consideration in the projects Draft Environmental Assessment.

Mahalo, for your consideration

Robin & Joseph Dwight

Robin & Joseph Dwight

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1222.6

OCT - 6 2006

Mr. Norman Ipson
1210 Ulupii St.
Kailua, HI 96734

Dear Mr. Ipson:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. In response to your August 15, 2005 e-mail, we note your comment that the proposed road would provide many residents of Pohakupu with relief from the excessive traffic in the area during sporting events. The planning and environmental review process currently underway will help to determine if an additional access road will provide the desired traffic relief.

We did not receive a copy of your April 16, 2005 letter to the House Transportation Committee, and would appreciate you re-sending it to us at your convenience.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

Russ K. Saito

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Norman Ipson [norm1210@msn.com]
Sent: Monday, August 15, 2005 9:01 AM
To: Buttaro, Benjamin
Subject: Kailua High School Proposed New Access Road

Dear Mr. Buttaro,

I have enclosed the attached comment on the Proposed Kailua High School Road I submitted to the House Transportation Committee April 16, 2005. If it happens, many residents of Pohakapu will feel relieved from the excessive traffic in the area during sporting events.

Thank you, I remain

s/Norman Ipson
1210 Ulupii Street, Kailua HI 96734

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1223.6

OCT - 6 2006

Lynn & Peter Miller
1351 Ulupii Street
Kailua, HI 96734

Dear Lynn and Peter Miller:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. Our comments on your September 1, 2005 letter are as follows:

1. We note your observations of pedestrians and vehicles on Ulupii Street. A traffic consultant has been hired to prepare a traffic study for the proposed project. The study will include vehicle counts and evaluate various alternatives that may reduce traffic in the Pohakupu neighborhood.

2. The planning and environmental review process currently underway will help determine if the proposed access road will help deter vehicles from making illegal turns into or out of the Pohakupu neighborhood.

3. The planning and review process will also help to determine if the proposed road will help reduce traffic during the morning and afternoon peak hours.

4. We note the Pohakupu Community Association's preference for the alternative which includes the connection to Kalanianaole Highway closest to the Women's Community Correctional Center.

5. We acknowledge your concern that the problems within the Pohakupu community appear to be getting worse. The intent of this project is to reduce traffic and improve safety in the Pohakupu neighborhood. Although the project cannot solve all of the problems, the hope is that it will provide some relief from traffic congestion.

In response to your September 2, 2005 e-mail, we acknowledge your concern that Kailua High School may be difficult to evacuate or access during a natural or man-made disaster. We will consider such scenarios during the planning and environmental review process.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Miller, Peter & Lynn [MILLERP004@hawaii.rr.com]
Sent: Thursday, September 01, 2005 9:18 AM
To: Buttaro, Benjamin
Subject: Kailua High School Proposed New Access Road

TO: Alex Buttaro

Attached is a letter with our comments regarding the need for the access road, for your consideration in the project's Draft EA. Do not hesitate to email or call us regarding further information or concerns.

Lynn and Peter Miller
(808) 262-0875

Buttaro, Benjamin

From: Miller, Peter & Lynn [MILLERP004@hawaii.rr.com]

Sent: Friday, September 02, 2005 8:26 AM

To: Buttaro, Benjamin

Subject: The primary reason for the new access road for Kailua H.S.

This email is not sent because I am a local resident near the school. It is sent because of the awful national disaster and regional unpreparedness that hit New Orleans and the Gulf Coast.

Sooner or later either a massive Tsunami from Alaska or a powerful hurricane will hit the windward side of this isolated island. Let's stop ignoring the changing climatic conditions and our lack of preparedness. That high school cannot be evacuated in a timely manner. Or, if the disaster is coastal and downtown Kailua gets flooded again (remember the storm of Jan 1, 1987?), getting to shelter at the high school could be physically difficult due to its isolated location. Is there a more isolated public school on Oahu?

A major power outage, a major fire among the wooden homes in Pohakapu, a deliberately set brush fire adjacent to the school with lots of smoke, and other not-unconceiveable major and minor catastrophes leaves the school population subject to great harm.

Kailua H.S. must meet the same safety standards as many other high schools in Honolulu. The community and the school badly need another emergency route to and from that public facility.

Peter S. Miller
1351 Ulupii Street
Kailua, HI 96734
(808) 227-2909

September 1, 2005

Perry Small, P.E.
Project Manager
Parsons Brinckerhoff Quade & Douglas, Inc.
American Savings Bank Tower
1001 Bishop Street, Suite 2400
Honolulu, HI 96813

Subject: Kailua High School Proposed New Access Road
Tax Map Key: 9-4-2-003:004
Chapter 343 Pre-Consultation Process

Dear Project Manager:

We live on Ulupii Street, within the first block off of Kal Highway. This is a residential area with narrow streets and no sidewalks. Ulupii Street was not built and was certainly not intended to be a busy through street to anywhere.

1. On August 24th, Peter stood in the driveway from 7:00 to 7:55 AM. The objective was to observe the use of the road.

A. Until 7:30 he mainly observed elementary school students walking on the road and the adjoining lawns to the overpass, some with parents but some just with young friends. There were also a few (less than 20) joggers, walkers, bike riders, and dog walkers. They begin at first light in this strictly residential neighborhood, but still go by until just before 7:30. Most walk facing the traffic, but some of the children and bicyclists of Pohakapu do not.

B, Right around 7:30 most of the residents of this neighborhood know enough to not walk along the road, for that's when the travel gets heavy. Peter counted 81 illegal right turns onto Ulupii Street from 7:30 until 7:55. At one point there were 11 cars in a row, one following the other, slowly, stopping at Uluoa, then proceeding to the one entrance to the high school parking lot. Most had their windows closed and we rarely heard loud music (unlike in the afternoons after classes end).

C. A few of those vehicles were pickups, vans and large trucks used for work (tree cutting, construction, other) that turned left at the first stop sign. We have gotten used to large trucks using Ulupii to get around the traffic tie-up at the Castle Hospital/Kailua Road junction. We have also begrudgingly become used to such vehicles not coming to a full stop at the turn onto Uluoa.

2. This week was the annual ritual of making the commuter traffic slower and more congested (and some angry) as Pohakupu and Maunawili conducted the annual C-TAP sign waving and ticket-issuing from 6:45 until 8:05 AM. Three to five police officers

were present and very busy. One woman in a new SUV with five other occupants was perplexed, since she did not know of an alternate way to drop off her passengers.

A. This year we did it on Monday and Wednesday. The two community associations had extra help from sign wavers in red shirts from the Women's Correctional Facility. We did get noticed, for better or worse, since during 7 to 8 AM the traffic from Enchanted Lake and Waimanalo is backed up to the old Kal Highway entrance or sometimes over the crest of the hill. There are many vehicles with occupants trying to get to work on time. The illegal turns (left or right) onto Ulupii to avoid the junction were perhaps an expedient option. It does not help with good community relations between the students and the local residents. But we want more enforcement and safety precautions, not less.

B. For the high school students, the illegal turn is the only viable option. The alternative of inching along to Kailua Road then down to Ulumanu Street is neither practical nor logical. Going to school earlier (6:00 AM?) to avoid the rush is not what the State should suggest as an option.

C. Ulumanu is the walkway from the nearest bus stop – along narrow, obsolete and un-maintained sections of sidewalks originally built by residents.

D. We appreciate the cooperation of officers from the Kailua station.

3. The return home from the high school is spread out over more hours, but is unacceptable to many residents for different reasons, including speeding, going straight through the stop sign, having the boom boxes in the vehicles turned up to annoying levels, and littering, particularly at night.

4. The recent meeting of the Pohakapu Community association reviewed the two alternatives for the turn off of Kal highway to the proposed new access road. The initial informal consensus was that the route closest to the correctional center would cause the least delay and stress on commuters.

5. We know that living near the high school means occasional inconvenience and noise from sporting events, graduation, and other events. We accept that. What we do not like is that we live in a neighborhood that the State and City allows only poor access to a large school over small streets in a strictly residential neighborhood where modern urban problems are getting worse, not better.

Lynn and Peter Miller
1351 Ulupii Street
Kailua, HI 96734
(808) 262-0875

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1224.6

OCT - 6 2006

Mr. Warren Nakano
1211 Ulupii Street
Kailua, HI 96734

Dear Mr. Nakano:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. Our comments on your September 2, 2005 e-mail are as follows:

1. We acknowledge your concerns about the mix of pedestrians and vehicles on Ulupii Street and in the Pohakupu neighborhood. The planning and environmental review process currently underway will help to determine if the proposed new access road will deter drivers from making illegal turns, reduce traffic congestion and improve safety.

2. An option to close or restrict the Ulumanu Drive main entrance to Kailua High School was discussed with the school's administration. The school was strongly opposed to such an idea, citing operational and security concerns.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Warren [warren@gccchawaii.org]
Sent: Saturday, August 13, 2005 2:56 PM
To: Buttaro, Benjamin
Subject: New Kailua High School Access Road

Dear Mr. Buttaro,

My wife and I live on Ulupii Street right near the gate to Kailua High School. We support the new access road as there are no sidewalks on our street leading to the school, so the kids walk on the road and the kids drive on the same road. Sometimes there are students who speed up the street... One student swerved into our frontage yard and tore up the grass... and later replanted some grass.

Many people make illegal turns, between designated hours from the highway, down our street every school day to get into the school and drive down the street which the students are walking. I think it not a safe situation.

A new access road to the school, closing this one would benefit the community. Thank you for your help to make this happen. We appreciate it.

Sincerely,
Warren Nakano

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

STATE OF HAWAII

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

(P)1225.6

OCT - 6 2006

Ms. Beverly O'Sullivan
1239 Ulupii Street
Kailua, HI 96734

Dear Ms. O'Sullivan:

Subject: Kailua High School
Planning for an Additional Access Road
Environmental Assessment (EA), Chapter 343 Pre-Consultation Process

Thank you for participating in the project pre-consultation scoping process and for your review and comments. In response to your September 5, 2005 e-mail, we acknowledge your concerns about the mix of pedestrians and vehicles on Ulupii Street and in the Pohakupu neighborhood. The planning and environmental review process currently underway will help to determine if the proposed new access road will reduce traffic congestion and improve safety.

If you have any questions, please call me at 586-0400 or Mr. Lance Maja of the Public Works Division at 586-0483.

Sincerely,

RUSS K. SAITO
State Comptroller

c: Mr. Perry Small, Parsons Brinckerhoff Quade and Douglas Inc.

Buttaro, Benjamin

From: Beverly O'Sullivan [bev@lava.net]
Sent: Monday, September 05, 2005 10:56 AM
To: Buttaro, Benjamin
Subject: Access road to KHS

Hello, Alex Buttaro,

This is a short note to support the planned access road from Kalanianaole Highway to Kailua High School.

My husband and I have lived on Ulupii Street for 43 years, enduring the problems of high school traffic on this narrow, un-curbed street, problems that include speeding cars killing our pets, endangering children walking to Maunawili School, and heavy delivery trucks making lots of noise. Residents on Ulumanu Drive, the other feeder street into the high school's only gate, also experience the consequences of heavy traffic much of the year. A dedicated alternate entrance and exit into Kailua High School would be a tremendous help in relieving traffic in this community of family residences, and would provide a more direct route for the many students and staff living in Waimanalo and Enchanted Lakes.

Mike Hey, Peter Miller, and Perry Small from the Poahukupu Community Association have worked diligently for many years to ameliorate the conditions outlined above. I thank you in advance for anything you can do to implement the project of making the access road a reality for all of us.

Sincerely,

Beverly O'Sullivan
1239 Ulupii Street
Kailua, HI 96734