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LAND USE COMMISSION
STATE OF HAWAII
2014 OCT - 8 P 4: 13

LETTER OF TRANSMITTAL

To: Daniel E. Orodener
State of Hawaii Land Use Commission
State Office Tower
Leiopapa A Kamehameha Building
235 South Beretania Street, Room 406
Honolulu, Hawaii 96813

DATE: October 8, 2014

RE: LUC Docket No. A92-683 - In re
Halekua Development Corporation
(Ho'ohana Solar 1, LLC - Successor
Petitioner to Parcel 52)

Mailed

Hand Delivered

THE FOLLOWING ARE TRANSMITTED HEREWITH:

<u>COPIES</u>	<u>DATE</u>	<u>DESCRIPTION</u>
Original + 1	10.08.2014	Successor Petitioner's First List of Exhibits; Successor Petitioner's Exhibits 17-22; Successor Petitioner's First List of Witnesses; Certificate of Service

For Your Information

For Review and Comment

For Your Files

For Necessary Action

Per Your Request

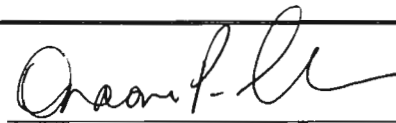
For Signature and Return (**Black Ink**)

Per Our Conversation

See Remarks Below

REMARKS: Pursuant to the *First Stipulation of the Parties Setting Forth the Filing Schedule*, filed with the Commission on September 19, 2014, in connection with Ho'ohana Solar 1, LLC's Motion to Amend Docket No. A92-683, filed with the Commission on August 11, 2014, enclosed please find Successor Petitioner's First List of Exhibits; Successor Petitioner's Exhibits 17-22; Successor Petitioner's First List of Witnesses; and Certificate of Service. An electronic copy of this filing will be transmitted to your office separately. If you have any questions or concerns, please contact me at (808) 523-2596 or pthoene@carlsmith.com or Steve Lim at (808) 523-2583 or slim@carlsmith.com.

By



Onaona P. Thoene

Enclosures

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HO'OHANA SOLAR 1, LLC

LAND USE COMMISSION
STATE OF HAWAII
2014 OCT - 8 P 4: 13

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI'I

In the Matter of the Petition of

HALEKUA DEVELOPMENT
CORPORATION, a Hawai'i corporation

To Amend the Agricultural Land Use District
Boundary into the Urban Land Use District for
Approximately 503.886 Acres at Waikele and
Ho'ae'ae, 'Ewa, O'ahu, City and County of
Honolulu, State of Hawai'i, Tax Map Key No.
9-4-02: 1, portion of 52, 70 and 71

DOCKET NO. A92-683

SUCCESSOR PETITIONER'S FIRST LIST
OF EXHIBITS; SUCCESSOR
PETITIONER'S EXHIBITS 17 - 22;
SUCCESSOR PETITIONER'S FIRST LIST
OF WITNESSES; CERTIFICATE OF
SERVICE

**SUCCESSOR PETITIONER'S FIRST LIST OF WITNESSES;
SUCCESSOR PETITIONER'S FIRST LIST OF EXHIBITS;
SUCCESSOR PETITIONER'S EXHIBITS 17-22**

Successor Petitioner to the portion of the Petition Area identified as Tax Map Key No. (1)
9-4-02: 052 ("**Parcel 52**"), HO'OHANA SOLAR 1, LLC, by and through its legal counsel,
CARLSMITH BALL LLP, hereby respectfully submits to the State of Hawai'i Land Use
Commission, *Successor Petitioner's First List of Exhibits; Successor Petitioner's Exhibits 17-
22; Successor Petitioner's First List of Witnesses; and Certificate of Service.*

DATED: Honolulu, Hawai'i, October 8, 2014.



STEVEN S.C. LIM
JENNIFER A. BENCK
PUANANIONAONA P. THOENE

Attorneys for Successor Petitioner to Parcel 52
HO'OHANA SOLAR 1, LLC

**SUCCESSOR PETITIONER HO'OHANA SOLAR 1, LLC'S FIRST LIST OF EXHIBITS
LAND USE COMMISSION DOCKET NO. A92-683**

Successor Petitioner's Exhibits 1-16 were filed with the Commission on August 11, 2014 as a part of Ho'ohana's *Motion for Order Amending the Findings of Fact, Conclusions of Law, and Decision and Order filed on October 1, 1996* in Docket No. A92-683.

Successor Petitioner's Exhibits 17-22 were filed with the Commission on October 8, 2014 as part of Ho'ohana's *Motion for Order Amending the Findings of Fact, Conclusions of Law, and Decision and Order filed on October 1, 1996* in Docket No. A92-683.

EX. NO.	DESCRIPTION	PARTY OBJECTIONS	ADMIT
1.	Map of the Petition Area in Docket No. A92-683, TMK Nos. (1) 9-4-002: 001 (por.), 052, 070, 071, 078 and 079 superimposed of the current tax map; GIS map showing the existing development southeast of and adjacent to the Petition Area		
2A.	Graphic showing the State Land Use District classifications of the Petition Area and surrounding properties		
2B.	Map of the Petition Area with an overlay of the current zoning		
2C.	Map of the regions covered by the Central O'ahu Sustainable Communities Plan		
2D.	Portions of the City and County of Honolulu Land Use Ordinances Master Use Table 21-3		
3.	Excerpts from the Findings of Fact, Conclusions of Law, and Decision and Order filed on October 1, 1996 in Docket No. A92-683 (" 1996 Order ")		
4.	Excerpts from the Development Plan and Final Environmental Assessment for Royal Kunia, Phase II, Increment 3, dated May 1996		
5.	Memorandum of Option Agreement between Robinson Kunia Land, LLC and Forest City Sustainable Resources, LLC, dated August 2, 2012		
6.	Ho'ohana team fact sheet		

7.	Robinson Kunia Land, LLC's consent to the Motion to Amend		
8.	Graphic explaining the Project's interconnection to the HECO electric grid vs. residential interconnection to the grid		
9.	Electrical site plan		
10.	Photograph of the photovoltaic ("PV") modules		
11.	Schematics of the PV modules racking and tracker systems, Project substations, inverters, concrete pads, and fencing		
12.	Archaeological Inventory Survey for Parcel 52 and Plantation Road		
13A.	Letter from Senator Mike Gabbard in support of the Ho'ohana Solar Project		
13B.	Letter from Blue Planet Hawai'i in support of the Ho'ohana Solar Project		
13C.	Letter from the Royal Kunia Country Club in support of the Ho'ohana Solar Project		
14.	View study of the Ho'ohana Solar Project from surrounding neighborhoods		
15.	Title reports for the Petition Area		
16.	Letter from Steven S.C. Lim to Daniel Orodener, dated July 31, 2014		
17.	Revised Preliminary Solar Farm Layout		
18.	Natural Resources Survey for the Ho'ohana Solar Farm site in Kunia, O'ahu		
19.	Construction Traffic Assessment for the Proposed Ho'ohana Solar Farm		
20A.	Letter from Clifford Smith, Meridian 158, LLC, to Larry Greene, Director of Public Policy and Business Development, Hanwha Solar Energy America, dated October 8, 2014		

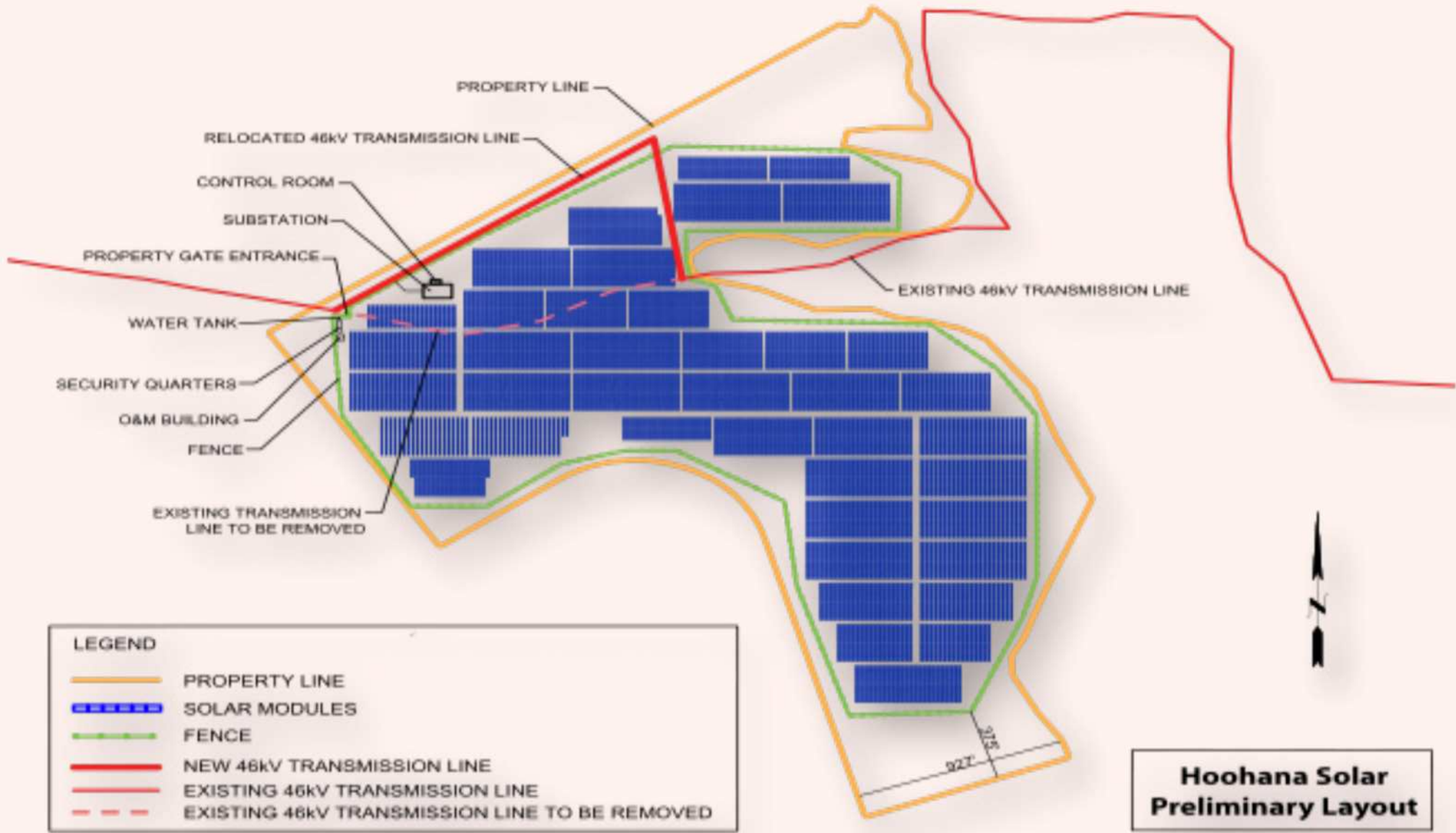
20B.	Federal Aviation Administration ("FAA") Determination of No Hazard to Air Navigation, dated October 8, 2014		
20C.	FAA Project Submission Success sheet, submitted August 10, 2014		
20D.	Summary Solar Glare Hazard Analysis Report Table for Honolulu International Airport; Project Coordinate Summary Table ("Exhibit A")		
21.	Letter from Sanford S.C. Yuen, P.E., Department of the Navy, to Mr. Clarence K. Tanonaka, Assistant to the President ParEn. Inc. dba Park Engineering, dated January 11, 1996		
22.	Sample lighting cut-off standards		

**SUCCESSOR PETITIONER HO‘OHANA SOLAR 1, LLC'S
FIRST LIST OF WITNESSES
LAND USE COMMISSION DOCKET NO. A92-683**

Name, Position, Organization (in order of appearance)	To be qualified as a witness in:	Subject Matter	Exhibit Nos.	Written Testimony	Length of Direct
Jeffrey H. Overton, AICP, LEED AP, Principal, Group 70 International, Inc.	Land use and environmental planning	Land use and environmental planning	TBD	No	30
Laurence Greene, Director of Public Policy and Business Development, Hanwha Solar Energy America	Utility scale solar development projects	Overall project analysis	TBD	No	30
Alan Zawtocky, Co-Trustee under the Will and of the Estate of Mark Alexander Robinson, and Co-Trustee under that Certain Deed of Trust executed by Mark Alexander Robinson and Mary Kapuahaulani Hart Robinson, Members, Robinson Kunia Land LLC	N/A	Landowner representative	7	No	10
Robert L. Spear, Ph.D., Principal Investigator, Scientific Consultant Services, Inc.	Archaeology	Archaeological, cultural and historic resources	12	No	15
Jon Wallenstrom, President, Forest City Hawaii	N/A	Project development	TBD	No	15
Ann Bouslog, Development Manager, Forest City Hawaii	N/A	Project development and renewable energy sector	TBD	No	15
Clifford Smith, Principal, Meridian 158, LLC	Development Consultant	Project management	TBD	No	20
Sohrab Rashid T.E., Principal, Fehr & Peers, or, Anjuli	Traffic engineer	Traffic management	TBD	No	10

Bakhru, Transportation Engineer, Fehr & Peers					
Eric B. Guinther, President, AECOS Inc.	Ecologist	Natural resources	TBD	No	15
Nonie Toledo, Owner and Principal, Nonie Toledo & Associates Incorporated	N/A	Community outreach	TBD	No	10

HO'OHANA SOLAR PROJECT SITE



Natural resources survey for the Ho'ohana Solar Farm site in Kunia, O'ahu



Prepared by:

AECOS, Inc.

45-939 Kamehameha Hwy, Suite 104

Kāne'ohe, Hawai'i 96744-3221

September 24, 2014

EXHIBIT 18

Natural resources survey for the Ho'ohana Solar Farm site in Kunia, O'ahu

September 24, 2014

AECOS No. 1386B

Eric Guinther and Reginald David¹
AECOS, Inc.
45-939 Kamehameha Hwy, Suite 104
Kāne'ohe, Hawai'i 96744
Phone: (808) 234-7770 Fax: (808) 234-7775

Introduction

Ho'ohana Solar 1 plans to construct a solar panel array (the "Project") on a parcel (TMK: 9-4-002:052) at Kunia in the central valley of O'ahu (*na ahupua'a* o Hō'ae'ae and Waikele; see Figure 1). The Project parcel is approximately 161 acres (65 ha) in area, all of which was surveyed for biological and other natural resources. The survey area also included the mostly paved, Plantation Road, to serve as the Project access route through active farm lands from Kunia Road (state route 750).

The project area is gently sloping land at around the 600-ft (180-m) elevation and is nearly all in agriculture (cropping), comprising both fallow and recently tilled fields (see Figure 2). The property is adjacent to Waikele Gulch, ending just short of a road along the lip of the gulch. At the northern end, the parcel drops down onto a sloped shelf some 30 to 70 ft lower than the main part of the property. A steep face separates the shelf from the latter. This shelf appears to be an ancient, abandoned gulch floor of either or Poliwai or 'Ekahanui gulches, which now enter Waikele Gulch along the north edge of the shelf. Project plans presently do not include the portion of this parcel on the shelf (or its steep margin) as part of the development.

At the south end of the parcel, the land is not being used for cropping. Reviewing satellite images available on Google Earth back to about 2000 suggests this southern area has not been used for crops since then, but was probably used as pasture at some time during or before this period. Shrub

¹ Rana Biological Consulting, Inc., Kailua-Kona, Hawai'i.

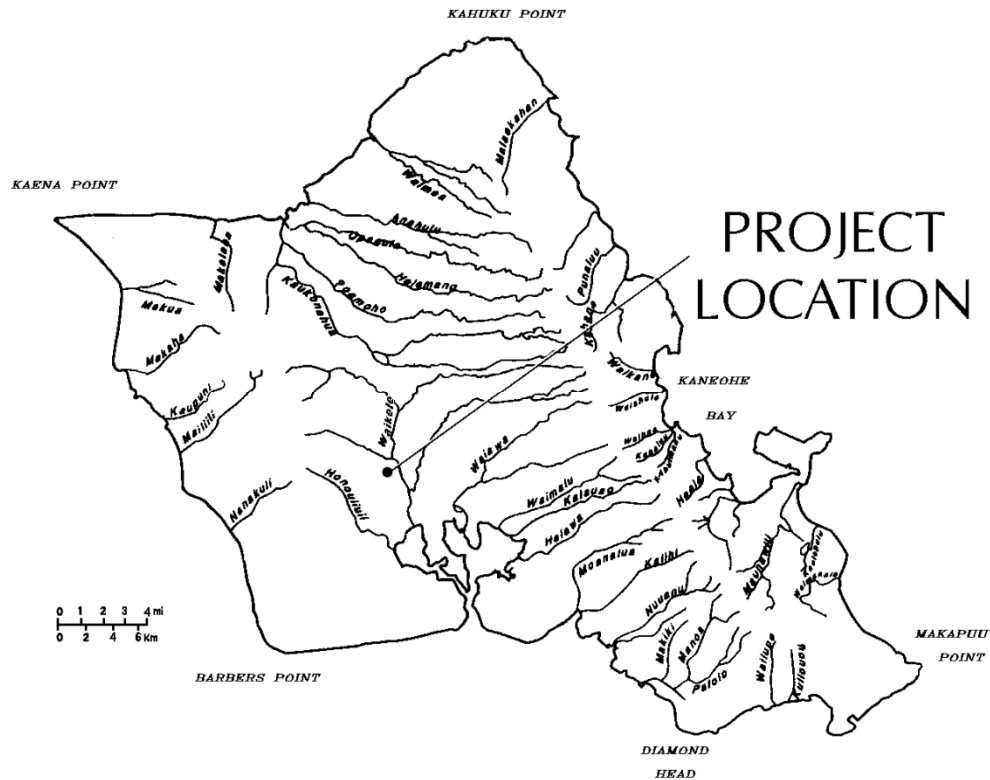


Figure 1. Location of Ho'ohana Solar Farm on O'ahu.

growth starts to appear around 2007, but does not become dominant until 2013. Aerial images from the 1950s (LSB, 1963) show the entire parcel was in pineapple fields at that time, with the exceptions of a small gulch on the eastern edge and the shelf area described above at the north end. Project plans show this southern area will be used for solar arrays and a storm-water runoff detention basin.

Although the parcel could be accessed by constructing a road over the long narrow strip of land (flag pole) running out to Kunia Road from the western edge of the property, preferred access will be along Plantation Road (see Fig. 2) and then follow the graded agriculture road into the northwest corner of the parcel. The narrow flag pole strip extends across land that is under cropping at either end, but mostly crosses a strip of presently unused land that is vegetatively identical to that described above for the south end of the project parcel. Plantation Road is an improved (paved) agricultural access road located

a short-distance further north off of Kunia Road and is bordered by active cropping of agricultural products, including some pineapple.



Figure 2. Site parcel, TMK: 9-4-002:052, outlined on satellite image.

Methods

Plants

Our survey of the flora in the Project area was undertaken on May 20 and August 18, 2014, and entailed a wandering pedestrian transect that traversed primarily those parts of the property that were not tilled and prepared for cropping. The survey area was all of the property as outlined in Fig. 2 (above) and the mostly paved Plantation Road visible in Fig. 2, coming into actively farmed fields from Kunia Road. A GNSS unit (Trimble, Series 6000 GeoXH) was used to record the progress track of the botanist and provide real time feedback on survey coverage. Plant species were identified as they were encountered and notations used to develop a qualitative sense of abundance as the survey progressed. Although the survey was conducted at the start of the dry season (May) and well into the dry season (August), conditions on central O'ahu in 2014 were exceptionally wet in terms of regularity of rainfall. The vegetation appeared well watered. The August survey was limited to the Poliwai Shelf (see Figure 2).

For a few species not immediately recognized in the field, photographs were taken and/or material collected for identification at the laboratory. Species names follow the nomenclature in *Manual for the Flowering Plants of Hawai'i: Volumes I and II* (Wagner et al., 1990) as updated by various more recently published papers summarized by Imada (2012).

Animals

Twelve avian count stations were sited roughly equidistant from each other within the survey area. A single six-minute avian point count was made at each of the nine count stations. Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. Avian counts were conducted in the early morning hours. Time not spent counting at point count stations was used to search the area for species and habitats not detected during point counts. Weather conditions were ideal, with no rain, unlimited visibility, and winds of between 3 and 7 kilometers per hour. The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union, 1998), and the 42nd through 54th supplements to the Check-List (American Ornithologists' Union, 2000; Banks et al., 2002, 2003, 2004, 2005, 2006, 2007, 2008; Chesser et al., 2009, 2010, 2011, 2012, 2013, 2014).

Our survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all mammalian species detected within the project area. Mammal scientific names follow Wilson and Reeder (2005).



Figure 3. View looking northeast into central part of site across a fallow field.

Results

Vegetation

The vegetation over a majority of the site is controlled by the present and past land uses. Large parts are tilled fields with very little vegetation. Other fields are presently fallow and support a weedy growth of grasses and other herbaceous plants (Figure 3, above). Areas not recently in use for agricultural purposes or perhaps never used for agricultural purposes (two small gulches and the northern shelf area) are covered by grassland with patches of scrub growth and scattered trees. In areas not recently cropped, the vegetation is dominated by Guinea grass (*Urochloa maxima*) and *koa haole* (*Leucaena leucocephala*) scrub, with trees (particularly silk oak or *Grevillea robusta*)

coming in (Figure 4). Density of the scrub growth is greatest in areas closest to Waikele Gulch and on the sloping margin of Poliwai Shelf (see Fig. 2).



Figure 4. Waste grassland with shrubs in the southwest and northeast parts of the Project area.

Flora

The flora of a site is a listing of the plant species found there. Table 1 is the list developed from our plant survey of the Ho'ohana Solar Farm site. A total of 63 taxa are listed. The status (whether native or introduced) of each taxon is given in column 3. Sixty-one of the taxa (97%) are introduced or non-native [Nat or Orn] species. Only two species (3%) are considered native Hawaiian plants [**Ind**]: *'uhaloa* (*Waltheria indica*) and *'a'ali'i* (*Dodonaea viscosa*). *'Uhaloa* is a very common ruderal species on lowland O'ahu. In a few areas (particularly field roads that were essentially abandoned), this plant was locally very abundant. *'A'ali'i* is not so common on O'ahu, but is not regarded as rare in the Islands by any means. Several plants were seen during our survey: a relatively

large individual in the less disturbed area at the south end of the Project site and several individuals across the south facing slope in the Poliwai Shelf area.

Table 1. Species listing (flora) for the Ho'ohana Solar Farm site in Kunia, O'ahu.

Species listed by family	Common name	Status	Abundance in survey	Notes
<i>FLOWERING PLANTS</i>				
<i>DICOTYLEDONES</i>				
<i>AMARANTHACEAE</i>				
<i>Alternanthera pungens</i> Kunth	khaki weed	Nat	O1	
<i>Amaranthus spinosus</i> L.	spiny amaranth	Nat	C	
<i>Amaranthus viridis</i> L.	slender amaranth	Nat	AA	
<i>ANACARDIACEAE</i>				
<i>Alternanthera pungens</i> Kunth	Christmas berry	Nat	R	<2>
<i>ASTERACEAE (COMPOSITAE)</i>				
<i>Bidens alba</i> (L.) DC.	---	Nat	AA	
<i>Bidens pilosa</i> L.	<i>kī</i>	Nat	O2	
<i>Conyza bonariensis</i> (L.) Cronq.	hairy horseweed	Nat	U	<2>
<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	---	Nat	R1	
<i>Emilia fosbergii</i> Nicolson	<i>pualele</i>	Nat	R1	
<i>Lactuca serriola</i> L.	prickly lettuce	Nat	O	
<i>Pluchea carolinensis</i>				
<i>Sonchus oleraceus</i> L.	sow thistle	Nat	C	
<i>Verbesina encelioides</i> (Cav.) Benth. & Hook.	golden crown-beard	Nat	AA	
<i>BIGNONIACEAE</i>				
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Nat	O2	<2>
<i>BRASSICACEAE</i>				
<i>Lepidium virginicum</i> L.	---	Nat	R	
<i>CHENOPODIACEAE</i>				
<i>Salsola tragus</i> L.	Russian thistle	Nat	O	
<i>CONVOLVULACEAE</i>				
<i>Ipomoea triloba</i> L.	little bell	Nat	A	
<i>CUCURBITACEAE</i>				
<i>Coccinia grandis</i> (L.) Voigt	scarlet-fruited gourd	Nat	R	
<i>Momordica charantia</i> L.	wild bitter melon	Nat	O	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
CARYOPHYLLACEAE				
<i>Drymaria cordata</i> (L.) Willd. ex Roem. & Schult.	<i>pipili</i>	Nat	R	
EUPHORBIACEAE				
<i>Euphorbia heterophylla</i> L.	<i>kaliko</i>	Nat	U	
<i>Euphorbia hirta</i> L.	garden spurge	Nat	R2	
<i>Euphorbia hypericifolia</i> L.	graceful spurge	Nat	U2	
<i>Macaranga tanarius</i> (L.) Müll. Arg.	---	Nat	R	
<i>Ricinus communis</i> L.	castor bean	Nat	R2	
FABACEAE				
<i>Acacia confuse</i> Merr.	Formosan koa	Nat	R	
<i>Albizia saman</i> F. Muell.	monkeypod	Nat	R	
<i>Chamaecrista nictitans</i> (L.) Moench	partridge pea	Nat	R	<2>
<i>Crotalaria incana</i> L.	fuzzy rattlepod	Nat	U	<2>
<i>Crotalaria pallida</i> Aiton	smooth rattlepod	Nat	R	<2>
<i>Desmanthus pernambucanus</i> (L.) Thellung	virgate mimosa	Nat	U	<2>
<i>Falcataria moluccana</i> (Miq.) Barneby & J. W. Grimes	albizia tree	Nat	R	<2>
<i>Indigofera hendicaphyla</i> Jacq.	creeping indigo	Nat	R	
<i>Indigofera suffruticosa</i> Mill.	indigo	Nat	O	<2>
<i>Leucaena leucocephala</i> (Lam.) deWit	<i>koa haole</i>	Nat	AA	<2>
<i>Macroptilium atropurpureum</i> (DC.) Urb.	---	Nat	C	
<i>Macroptilium lathyroides</i> (L.) Urb.	cow pea	Nat	R	<1,2>
LAMIACEAE				
<i>Hyptis pectinata</i> (L.) Poit.	comb hyptis	Nat	O2	<2>
MALVACEAE				
<i>Malva parviflora</i> L.	cheese weed	Nat	U1	
<i>Sida ciliaris</i> L.	---	Nat	U1	
<i>Sida spinosa</i> L.	prickly sida	Nat	R	
<i>Waltheria indica</i> L.	<i>'uhaloa</i>	Ind	O3	<2>
MELIACEAE				
<i>Melia azedarach</i> L.	Chinaberry	Nat	R	<2>
MORACEAE				
<i>Ficus microcarpa</i> L. f.	Chinese banyan	Nat	R	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
MYRTACEAE				
<i>Psidium guajava</i> L.	common guava	Nat	R	<2>
<i>Syzygium cumini</i> L.	Java plum	Nat	U	
NYCTAGINACEAE				
<i>Boerhavia coccinea</i> Mill.	false <i>alena</i>	Nat	O	
PASSIFLORACEAE				
<i>Passiflora foetida</i> L.	running pop	Nat	O	
PORTULACACEAE				
<i>Portulaca oleracea</i> L.	pigweed	Nat	U1	
PROTEACEAE				
<i>Grevillea robusta</i> A. Cunn. ex R. Br.	silk oak	Nat	U2	<2>
SAPINDACEAE				
<i>Dodonaea viscosa</i> Jacq.	'a'ali'i	Ind	U1	<2>
SOLANACEAE				
<i>Nicotiana glauca</i> R.C. Graham	tree tobacco	Nat	R	
<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) Spooner, G. Anderson, & Jansen	wild cherry tomato	Nat	R	
VERBENACEAE				
<i>Lantana camara</i> L.	lantana	Nat	U1	<2>
ZYGOPHYLLACEAE				
<i>Tribulus terrestris</i> L.	puncture vine	Nat	O	
FLOWERING PLANTS				
MONOCOTYLEDONES				
CYPERACEAE				
<i>Cyperus rotundus</i> L.	nut grass	Nat	U3	
POACEAE				
<i>Avena sativa</i> L.	oat; cult. var.	Orn	A1	
<i>Cenchrus echinatus</i> L.	sand bur	Nat	O	
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	Nat	A	
<i>Chloris divaricata</i> R. Br.	stargrass	Nat	R	
<i>Digitaria insularis</i> (L.) Mez ex Ekman	sourgrass	Nat	A	
<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	Nat	A	
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	Nat	A	
<i>Setaria verticillata</i> (L.) P. Beauv.	bristly foxtail	Nat	O1	
<i>Sorghum</i> cf. <i>bicolor</i> (L.) Moench	sorghum; cult. var.	Orn	O	
<i>Sorghum halepense</i> (L.) Pers.	Johnson grass	Nat	O	

Table 1 (continued).

Species listed by family	Common name	Status	Abundance in survey	Notes
POACEAE (continued)				
<i>Urochloa maxima</i> (Jacq.) R. Webster	Guinea grass	Nat	AA	<2>
<i>Urochloa mutica</i> (Forssk.) T.Q. Nguyen	California grass	Nat	R	

Key to Table 1:

STATUS = distributional status for the Hawaiian Islands:

- Ind** = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
Nat = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
Orn = A cultivated plant; a species not thought to be naturalized (spreading on its own) in Hawai'i.

ABUNDANCE = occurrence ratings for plant species:

- - Species not present in area.
R - Rare seen in only one or perhaps two locations.
U - Uncommon seen at most in several locations
O - Occasional seen with some regularity
C - Common observed numerous times during the survey
A - Abundant found in large numbers; may be locally dominant.
AA - Very abundant abundant and dominant; defining vegetation type.

Numbers (1 - 3) following qualitative rating of abundance indicate localized abundance is greater than occurrence rating. For example, R3 would be a plant encountered only once or twice, but very numerous where encountered. An A1 would indicate a plant abundant in a limited portion of the survey area.

- NOTES: <1> - A single, dead plant seen.
 <2> - Also recorded August 18 on Poliwai Shelf.

Fallow fields provide the greatest diversity of species, dominated by ruderal weeds that have come up after the land has been tilled, planted, and harvested. Unusual in this regard is the fact that most of the species on fallow plots are common or abundant; that is, many species dominate, indicating a seed bank that was allowed to germinate at a specific point in time in the not too distant past. The weeds around the margins of the fields and along farm roads tend to be a bit more diverse, but include many species that are rare or uncommon. Of course, both areas share a mostly similar list of species, so no attempt was made to describe the flora by type of area.

Birds

A total of 722 individual birds of 24 species, representing 17 separate families, was recorded during station counts (Table 2). All 24 avian species recorded during the course of this survey are alien to the Hawaiian Islands. Avian diversity and densities are in keeping with the highly disturbed nature of the environment present in the survey area. Three species—Zebra Dove (*Geopelia striata*), Common Waxbill (*Amandava amandava*), and Red-vented Bulbul (*Pycnonotus cafer*)—accounted for slightly less than 48.5% of all birds recorded during station counts. The most frequently recorded species was Zebra Dove, which accounted for 20% of the total number of individual birds recorded during station point counts.

Table 2. Avian species detected at the Ho'ohana Solar Farm site in 2014.

Common Name	Scientific Name	ST	RA
PHASIANIDAE - Pheasants & Partridges			
Phasianinae - Pheasants & Allies			
Gray Francolin	<i>Francolinus pondicerianus</i>	A	0.83
0.670.67Black Francolin	<i>Francolinus francolinus</i>	A	2.08
Ring-necked Pheasant	<i>Phasianus colchicus</i>	A	0.33
PELECANIFORMES			
ARDEIDAE - Herons, Bitterns & Allies			
Cattle Egret	<i>Bubulcus ibis</i>	A	3.92
COLUMBIFORMES			
COLUMBIDAE - Pigeons & Doves			
Spotted Dove	<i>Streptopelia chinensis</i>	A	3.75
Zebra Dove	<i>Geopelia striata</i>	A	16.67
PSITTACIFORMES			
PSITTACIDAE – Lories, Parakeets, Macaws & Parrots			
Psittacini –Typical Parrots			
Rose-ringed Parakeet	<i>Psittacula krameri</i>	A	0.17
PASSERIFORMES			
ALAUDIDAE - Larks			
Sky Lark	<i>Alauda arvensis</i>	A	1.50
PYCNONOTIDAE - Bulbuls			
Red-vented Bulbul	<i>Pycnonotus cafer</i>	A	5.75
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	A	0.83

Table 2 (continued).

Common Name	Scientific Name	ST	RA
	CETTIIDAE - Cettia Warblers & Allies		
Japanese Bush-Warbler	<i>Cettia diphone</i>	A	0.92
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	<i>Zosterops japonicus</i>	A	2.00
	TIMALIIDAE - Babblers		
Red-billed Leiothrix	<i>Leiothrix lutea</i>	A	0.17
	TURDIDAE - Thrushes		
White-rumped Shama	<i>Copsychus malabaricus</i>	A	0.08
	STURNIDAE - Starlings		
Common Myna	<i>Acridotheres tristis</i>	A	3.00
	THRAUPIDAE - Tanagers		
Red-crested Cardinal	<i>Paroaria coronata</i>	A	1.75
	EMBERIZIDAE - Emberizids		
Saffron Finch	<i>Sicalis flaveola</i>	A	0.25
	CARDINALIDAE - Cardinals Saltators & Allies		
Northern Cardinal	<i>Cardinalis cardinalis</i>	A	2.25
	FRINGILLIDAE - Fringilline and Carduline Finches & Allies		
	Carduelinae - Carduline Finches & Hawaiian Honeycreepers		
House Finch	<i>Haemorhous mexicanus</i>	A	3.58
	ESTRILDIDAE - Estrildid Finches		
Common Waxbill	<i>Estrilda astrild</i>	A	7.42
Red Avadavat	<i>Amandava amandava</i>	A	0.92
Java Sparrow	<i>Lonchura oryzivora</i>		0.67
Scaly-breasted Munia	<i>Lonchura punctulata</i>	A	0.89
Chestnut Munia	<i>Lonchura atricapilla</i>	A	0.33

Key to Table 2:

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

RA Relative Abundance – Number of birds detected divided by the number of count stations (12)

Mammals

Four terrestrial mammalian species were detected on site during the course of this survey. Scat, tracks and sign of dog (*Canis familiaris*), small Indian mongoose (*Herpestes auropunctatus*), cat (*Felis catus*), and pig (*Sus scrofa*) were recorded in numerous locations within the survey site. All four of the mammalian species recorded are alien to the Hawaiian Islands and all are deleterious to native species.

Discussion

Plant Resources

No botanical resources of interest or concern were noted by our survey of the Ho'ohana Solar Farm site. With but a couple of common native plants as exceptions, the plants growing at this site are all non-native species. No plants listed as threatened or endangered under either state or federal endangered species statutes occur here now or would be anticipated to be growing in this area (DLNR, 1998; USFWS; 2005a, 2005b, 2012a).

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitats present on the site. A total of 24 avian species were recorded. As previously discussed, all of the avian species recorded during the course of this survey are alien to the Hawaiian Islands. The study site is an active large mixed agriculture farm. Locations, and densities of avian species will change as different crops are planted and/or fields are plowed or left fallow.

Although no seabirds were detected during this survey, it is possible that the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) over-fly the project area between April and the middle of December each year in very small numbers. Newell's Shearwaters are not known to breed on the Island of O'ahu, though seabirds likely to be this species have been recorded on ornithological radar in low numbers flying over parts of the island.

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

Although no shorebirds were recorded, it is probable that at least one of the migratory shorebirds species commonly encountered in Hawai'i, the Pacific Golden Plover (*Pluvialis fulva*), uses resources on a seasonal basis within the

project site. The plover is an indigenous migratory shorebird species which nests in the high Arctic during the late spring and summer months, returning to Hawai'i and the tropical Pacific to spend the fall and winter months each year. They usually leave Hawai'i and return to the Arctic in late April or the very early part of May. As this survey was conducted after most of the wintering plover in Hawai'i had left the Islands for their breeding grounds, it is not surprising that none was recorded. Pacific Golden-Plover are commonly encountered throughout the Hawaiian Islands during late summer through mid-spring months.

The principal potential impact that the installation and operation of a PV electrical generating site poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the birds' nesting season. The two situations with outdoor lighting that might pose a threat to nocturnally flying seabirds are: 1) during construction it is deemed necessary to conduct night-time construction activities; and, 2) following build-out, security lighting is used around the site. If night-time construction activity or equipment maintenance is proposed during construction, all associated lights should be shielded, and where large flood/work lights are used, they should be placed on poles that are high enough to allow the lights to be pointed directly at the ground. If streetlights or exterior facility lighting is installed at the Project, the lights need to be shielded (Reed et al., 1985; Telfer et al., 1987).

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitats currently present on the site. Although no rodents were recorded it is likely that some of the four established alien *muridae* found on O'ahu—roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), and European house mouse (*Mus musculus domesticus*)—use various resources found within the general project area on a seasonal basis. There are a number of rodent bait stations scattered about the farm, trucking and storage areas, indicating that rodents are present and are controlled on parts of the property. All of these introduced rodents are deleterious to native ecosystems.

With the exception of the endangered Hawaiian hoary bat or 'ōpe'ape'a (*Lasiurus cinereus semotus*), all terrestrial mammals currently found on the Island of O'ahu are alien species, and most are ubiquitous. Hawaiian hoary bat was not detected during the course of this survey. Given the habitats present on the site and the lack of suitable roosting trees, any usage of the area by this species would be of an incidental foraging nature.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR, 1998; USFWS; 2005a, 2014).

Critical Habitat

No federally-declared critical habitat occurs in the project area. There is no equivalent statute or rule under State of Hawai'i laws or regulations.

Wetlands and Streams

No wetlands or streams occur at the project site. However, what appears to be an agricultural drainage system running roughly downslope (north to south) off to the west of the parcel is crossed by the flagpole portion of the parcel. This ditch feature, shown in the National Wetland Inventory (NWI; USFWS, 1984), widens out in the area where it is crossed. The ditch feature is coded in the NWI as PEM1C (seasonally flooded palustrine [marsh] wetland with persistent emergent vegetation) and the expanded feature is coded PEM1Ch (same, plus diked or impounded). Thus, the former is likely a farm drainage ditch and latter is likely a detention basin. Features indicated on NWI maps are not necessarily jurisdictional (that is, do not necessarily come under U.S. Army Corps of Engineers authority) and, indeed, do not necessarily exist. Not all areas mapped by USFWS were field validated by the agency. The NWI does not determine federal jurisdiction of wetlands; it is only an inventory of aquatic features. Generally, man-made agricultural ditch and pond systems are exempted from requirements under Section 404 of the Clean Water Act (USACE, 2005; USACE & USEPA, 2007). Of relevance are flow characteristics and where the flow eventually ends up. Flow in this feature appears to be clearly ephemeral in nature in the Project vicinity, and its disposal seems to be into a series of normally dry detention ponds upslope of and within Royal Kunia subdivision in Waipahu.

The pond feature is shown on the USGS topographic sheet (Schofield Barracks Quadrangle, USGS, 7.5-minute Series, 1998) as a pond. A weak blue line is shown on the same sheet below a lower detention basin, this line eventually going into Waipahu near the shore of West Loch, Pearl Harbor. This urban ditch is shown on earlier sheets (Waipahu Quadrangle, USGS, 7.5-minute Series, 1983) as ending at the West Loch shore, but does not appear on the more recent Pearl Harbor Quadrangle (USGS, 7.5-minute Series, 1999). Our assessment, without investigating beyond the maps and satellite images, is that this feature is not jurisdictional in the Project vicinity. However, if it is contemplated to construct a road crossing this feature, the matter should be investigated further.

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September 25, 2014

Ann Bouslog
Development Manager
Forest City Hawaii
5173 Nimitz Road
Honolulu, HI 96815

Subject:*Construction Traffic Assessment for the Proposed Ho'ohana Solar Farm
(Oahu, HI)*

Dear Ms. Bouslog:

Fehr & Peers has prepared a traffic assessment for a proposed solar farm to be constructed by Forest City Sustainable Resources, LLC (FCSR) and Hanwha QCells USA, working together as Ho'ohana Solar 1, LLC (HSO) in the Kunia area on the island of O'ahu. This assessment was prepared in anticipation of potential concerns from the State Land Use Commission (LUC) review of the project application. This letter includes an assessment of the vehicle trip generation anticipated during project construction and during project operations, as well as an evaluation of potential traffic issues within the study area.

PROJECT DESCRIPTION

The proposed project is a new 20 megawatt (MW) solar installation located in Kunia, mauka of Royal Kunia Country Club. According to HSO, the proposed access point for construction traffic is expected to be on Plantation Road, by way of Kunia Road (State Highway 750). Based on the available regional access points/interchanges and the fact that materials will be transported from the Sand Island area to the site, trucks are expected to use H-1 Freeway and Kunia Road to access the site. **Attachment A** displays the project site.

Once operational, the solar farm is anticipated to average five employees on site at any given time. As a result, the number of employee vehicle trips generated by the proposed project during typical operations is considered negligible (i.e., the daily variation in traffic in peak hour volumes on roadways near the site will be greater than the number of project-generated trips and drivers would not be able to perceive the additional traffic). The primary impact to traffic for this solar farm project is associated with potential temporary construction traffic impacts.

Based on the needs of a 20 MW facility, the project construction is anticipated to take place over the course of approximately nine (9) to 12 months and will require up to 100 workers on site at a given time. According to the construction of similar facilities in other locations, the number of employees for roughly the first three months and the last three months of construction will be lower with peak on-site employment occurring for the three months in the middle of the project schedule. The average number of employees during construction is approximately 50. Construction is expected to begin in fall 2015 and continue into 2016.

PROPOSED VEHICLE ACCESS

According to HSO the proposed access point for construction traffic is expected to be on Plantation Road where it intersects Kunia Road approximately 1.5 miles mauka of Anonui Street. The entrance to the solar facility will be located at the end of the Plantation Road extension approximately 0.8 miles east of Kunia Road and approximately 0.2 miles east of Leia St. Kunia Road is under the jurisdiction of the State of Hawaii Department of Transportation - Highways Division (HDOT) and Plantation Road is a private street.

Based on the available regional access points/interchanges and the fact that materials will be transported from the Sand Island area to the site, all heavy trucks are expected to use the H-1 Freeway and turn right onto Kunia Road from the Ewa-bound H-1 Off-Ramp to access the site via Plantation Road and return using the opposite movements. Construction workers approaching the site in the morning will travel in both directions on Kunia Road and turn left or right onto Plantation Road.

The Kunia Road/Plantation Road intersection includes gates on either side of the east leg of Plantation Road (opposite the Monsanto entrance) and Kunia Road is posted with a 45 mile per hour limit. Approximately 175 feet south of Plantation Road, the shoulder on Kunia Road widens to allow right-turning vehicles to move out of the travel lane, which will help to reduce delays for mauka-bound vehicles. This existing deceleration area is used by existing farm equipment and will benefit construction trucks accessing the site as it will allow them to begin making the transition onto Plantation Road earlier and thus reduce conflicts with through vehicles on Kunia Road. It should also be noted that mauka-bound vehicles are precluded from passing other mauka-bound vehicles from approximately 225 feet makai of Plantation Road to 260 feet mauka of the intersection.

ACTIVE MODE AND TRANSIT ACCESS

BICYCLE AND PEDESTRIAN TRAVEL

Given the undeveloped nature of the project site and the low density development of the immediate surrounding area, the potential conflict is low between site-generated traffic and non-automobile modes including walking and biking. While separate bicycle and pedestrian facilities are typically encouraged to reduce vehicle traffic, the rural circulation system and distant land uses in the vicinity of the project site are not conducive to multi-modal travel.

TRANSIT

There is no existing transit access serving the project site or on Kunia Road near the Plantation Road intersection. There are existing bus stops within the residential neighborhoods south of the proposed project, but the closest stop is located on Anonui Street and would still require walking approximately 2.5 miles to reach the project site entrance east of Leia Street.

POTENTIAL IMPACTS TO ACTIVE MODES AND TRANSIT

The City and County of Honolulu and HDOT do not specify impact criteria for pedestrian, bicycle, and transit impacts. However, these impacts are generally evaluated based on whether a proposed project would: 1) conflict with existing or planned pedestrian, bicycle, or transit facilities, or 2) create walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. As noted above, the project is not expected to conflict with any existing active transportation modes (i.e., bicycling and walking) or transit, and it would not create demand for these modes given its isolated location. Accordingly, no impacts to non-automobile travel are anticipated.

TRAFFIC VOLUMES

The addition of traffic from the proposed project may impact operations of the Plantation Road / Kunia Road intersection during the anticipated nine to twelve-month construction period. Historic 2012 traffic counts were collected from the Hawaii Department of Transportation (HDOT) at Kunia Road north of Anonui Street to determine the magnitude of existing volumes on Kunia

Road. HDOT data indicated that most vehicles are traveling mauka-bound during the morning peak hour 6:30 AM to 7:30 AM (1,164 mauka-bound vs. 316 makai-bound), and traveling makai-bound during the evening peak hour 4:45 PM to 5:45 PM (350 mauka-bound and 1,025 makai-bound). These HDOT traffic count sheets are included in **Attachment B**.

Project construction is expected to generally occur during late 2015 to late 2016, and most construction-generated traffic will be traveling mauka-bound in the peak direction traffic in order to access the site in the morning; and makai-bound with the peak traffic in order to exit the site in the evening.

ESTIMATED PROJECT TRIP GENERATION

Construction traffic comprises private vehicles driven by construction workers plus trips made by trucks delivering materials, hauling earth and debris, and providing other services (e.g., food trucks). In general, workers are assumed to make one inbound trip and one outbound trip per day for a total of two daily trips. Detailed information on construction activities was provided by HSO and included the number of trucks needed to deliver the photovoltaic panels, steel piles for mounting the panels, gravel for on-site roadways, etc. This information was used to estimate the total number of truck trips during the planned construction period of nine (9) to 12 months and the average number of truck trips per day, which is 40 (i.e., 20 inbound and 20 outbound). The full details of the trip generation analysis and assumptions associated with the proposed project are included in **Attachment C**. It is important to note that this information is preliminary and may be refined once a specific contractor is selected to construct the project.

This traffic assessment conservatively assumes that all 100 construction workers drive their own vehicles to and from the project site during the typical commute peak hours. In reality, it is expected that some carpooling would occur and that roughly half of the worker trips would be made before or after the peak hours of traffic on Kunia Road. The assessment also assumes that approximately 20 percent of heavy vehicle truck trips occur during these same periods. Assuming a construction work day between 7:00am and 4:00pm, this would result in an average of approximately four (4) truck trips or roughly 10 percent of the total per hour. This amount of truck traffic during the peak hours was doubled to provide a more conservative evaluation. The project trip generation under construction conditions is summarized in **Table 1** below and represents a conservative scenario.

Table 1-Project Construction Trip Generation – Conservative							
Trip Type	Daily Trips	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Auto ¹	200	100	100	0	100	0	100
Trucks ²	40	8	4	4	8	4	4
Total	240	108	104	4	108	4	104
Note: ¹ Assumes 100% of construction employees drive to project site in a single occupant vehicle during peak hours, when, in reality, the number of trips will likely be closer to 50 during each peak hour. ² Assumes 20% of truck trips occur during peak hours							

SIGHT DISTANCE ASSESSMENT

The Plantation Road / Kunia Road intersection was assessed from a sight distance perspective to determine if drivers of vehicles turning onto Kunia Road would be able to appropriately gauge gaps in approaching traffic. Based on the posted speed limit in the area, 45 MPH, the design speed for this section was assumed to be 50 MPH (or 5mph greater than the posted limit). The minimum stopping sight distance required with this speed limit is 425 feet. A preliminary assessment of the intersection indicates a stopping sight distance of approximately 600 feet for vehicles approaching from mauka of Plantation Road (i.e., from Wahiawa) and greater than 600 feet in the opposite direction (i.e., from Anonui Street). Providing adequate sight distance in both directions at the Plantation Road approach will allow drivers of vehicles exiting Plantation Road to determine appropriate gaps in traffic before turning onto Kunia Road.

POTENTIAL TRAFFIC IMPACTS

The distribution of construction worker traffic is estimated to be 70% from the Ewa and Honolulu areas, while 30% is expected to be from the Wahiawa, North Shore and Koolauloa areas. Assuming the conservative volume of 100 worker trips, project-generated traffic could temporarily add up to roughly seven (7) percent to the existing peak directional volumes on Kunia Road. As noted above, a more likely construction worker volume during the peak hour is 50 vehicle trips, which would add less than four percent to the existing peak directional volumes. Since the addition of this traffic is a temporary condition during project construction only, and because the traffic volumes on roadways can vary from day to day by up to 10 percent, the

addition of this construction traffic is not likely to be noticed by the average driver and is not considered a significant traffic impact.

Based on four inbound truck trips during the peak hour, this equates to one truck every 15 minutes either making the inbound right-turn from Kunia Road onto Plantation Road or turning left out of Plantation road during each peak hour. As a result, construction truck traffic is not anticipated to have a major impact or cause major disruptions to vehicular traffic on Kunia Road. However, the temporary addition of heavy trucks and the increase of vehicles turning on and off Kunia Road will represent a change in conditions for drivers in this area.

In addition, some mauka-bound drivers behind trucks turning right onto Plantation Road may be tempted to pass trucks as they slow approaching the intersection. Because the existing "no passing" zone ends only 225 feet makai of the intersection, passing vehicles may end up in the opposing lane in or near the intersection. This would introduce additional conflicts that could reduce safety. As such, steps should be taken to increase driver awareness and reduce the potential for vehicle conflicts at the Kunia Road/Plantation Road intersection.

Once fully operational, the solar farm is anticipated to have approximately five (5) employees on site at any given time. As a result, the employee trips generated by the proposed project are negligible. **Table 2** below presents the estimated project trip generation once the solar farm is operational.

Table 2-Fully Operational Trip Generation							
Trip Type	Daily Trips	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Employees ¹	10	5	5	0	5	0	5
Note:							
¹ Assumes five (5) employees on-site once project is operational							

RECOMMENDED MODIFICATIONS DURING PROJECT CONSTRUCTION

As noted above, the volume of traffic generated by construction of the project does not warrant the need for typical roadway capacity enhancements (e.g., new turn or through lanes). However, the addition of vehicles, especially large trucks, turning into and out of the east leg of the Kunia Road/Plantation Road intersection does warrant some modification to traffic control devices in the area to raise driver awareness and enhance safety. To minimize the potential for conflicts and to project impacts to traffic operations, the contractor should include the following elements in a construction traffic management plan:

- Install temporary signage on mauka-bound Kunia Road between Anonui Street and Plantation Road that indicates the presence of trucks and that they are entering/exiting the roadway near Plantation Road.
- Install temporary signage on makai-bound Kunia Road between the Hawaii Country Club and Plantation Road that indicates the presence of trucks and that they are entering the roadway from Plantation Road.
- Field verify available sight distance and maintain adequate sight distance for drivers exiting Plantation Road and turning onto Kunia Road. Maintenance may include pruning vegetation and not installing signage or other barriers that would block driver's field of vision at the intersection.
- Extend the painted median solid line delineating the "no passing zone" for mauka-bound vehicles at least an additional 500 feet in the makai direction.

The trips generated by the project once it is fully operational are negligible compared to those generated by construction traffic, and no permanent traffic improvements are required. The extension of the "no passing" zone could be maintained or be eliminated at the discretion of HDOT.

Conclusion

The proposed project will generate a negligible amount of vehicle traffic when the solar farm is fully constructed and operational. During construction, the site is expected to generate a total of 240 daily vehicle trips including trucks, and between 58 and 108 peak hour trips depending on the number of employee trips made during the AM and PM peak hours. The number of truck trips during each peak hour is estimate to be eight (8) or approximately one every eight (8) to 15 minutes depending on inbound and outbound travel. According to the project sponsor HSO,

construction activity is planned to occur over a nine (9) to 12-month period, and the traffic assessment showed that the project would only result in temporary impacts during construction.

Based on the evaluation presented in this report, the proposed point of access is sufficient to serve the anticipated construction traffic volume. However, several measures are recommended to enhance safety for vehicles turning into and out of Plantation Road, as well as for those on Kunia Road. These measures are typically included in construction traffic management plan for the project and include: verification of adequate sight distance at Plantation Road, extension of the mauka-bound no-passing zone on Kunia Road at Plantation Road by at least 500 feet in the makai direction, and installation of temporary signage approaching the intersection from both directions informing drivers on the roadway of construction activities and the presence of heavy vehicle traffic.

We appreciate the opportunity to assist you with this project. Please let us know if you have any questions on the information in this report.

Sincerely,

FEHR & PEERS



Sohrab Rashid, TE
Principal



Anjali Bakhru
Transportation Engineer

SD14-0138

Attachment:

- Attachment A – Proposed Project Site
- Attachment B – HDOT Traffic Data
- Attachment C – Trip Generation Estimates



Kunia Rd

Plantation Rd

Leia St

750

HO'AE'AE
AHUPUA'A


Nav Mag P
Harbor Wai

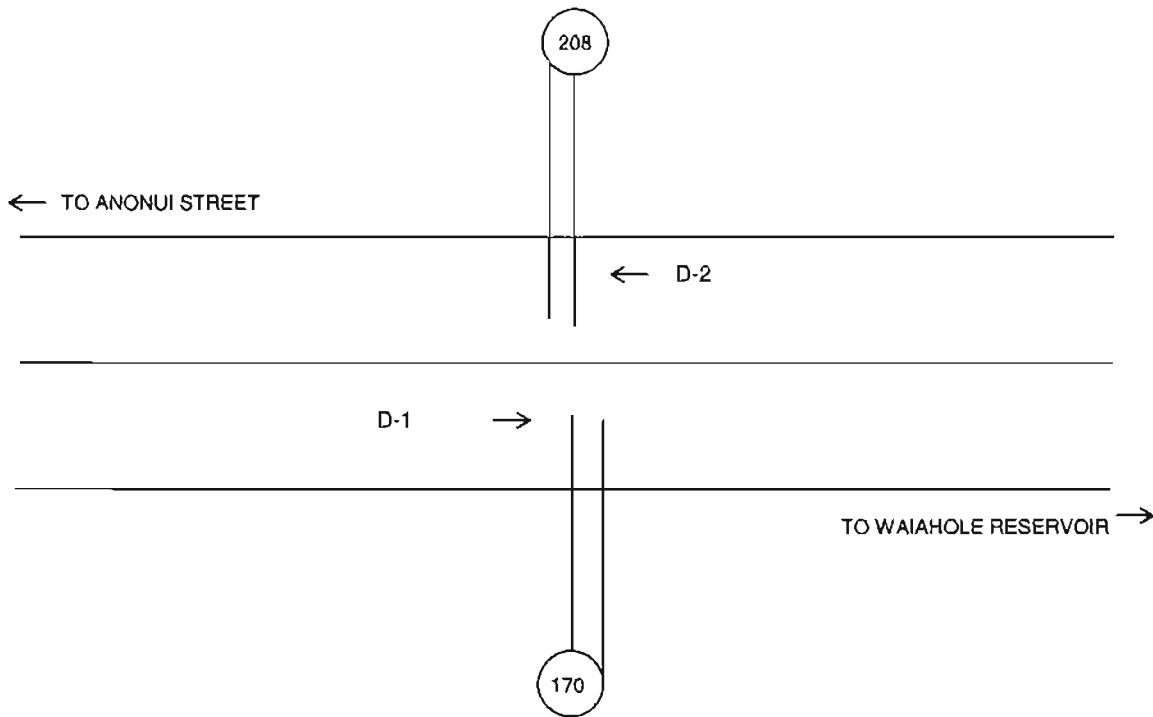
Military Access Rd

0 250 500
SCALE: 1" = 250'

Ho'ohana
Kunia, Hawaii

QCELLS
SOLAR PANELS
1001 Irvine Center Drive, Ste 1200
Irvine, CA 92614


ISLAND: OAHU
AREA: KUNIA



Station No:	B72 0750 00033
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Station Location:			
Kunia Road between Anonui Street and Waiahole Reservoir			
Station Mileage:	1.20	GPS Coord (Latitude):	21.40425 N
		GPS Coord (Longitude):	158.04129 W
Begin Survey (Date/Time):	1-25-12 0000	End Survey (Date/Time):	1-27-12 0000
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:	CA, EP, CO, LT, RG	Module No.:	

HPMS DATA						
Segment Description:						
KUNIA ROAD - KUPUNA LOOP (N) TO SCHOFIELD BARRACKS BDRY						
Segment Begin LRS	0.33	Segment End LRS	6.92	Length	6.59	
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route
				No.	Mile	D-2 = Direction to Beginning of Route
KUNIA ROAD	S	14	4	750	1.20	D-1 TO WILIKINA DRIVE
						D-2 TO H-1 OVERPASS

Sketch By:	EPJ	Date:	1/12/2012	SLD:	2009
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Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
2012 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000033
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - KUPUNA LOOP TO BEGINNING OF
Town: Oahu
Count Type: CLASS
DIR 1: +MP
DIR 2: -MP
Final AADT: 14500
Route No: 750



TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL		
DATE : 01/25/2012																	
12:00-12:15	5	12	17	06:00-06:15	210	59	269	12:00-12:15	83	109	192	06:00-06:15	83	154	237		
12:15-12:30	6	4	10	06:15-06:30	205	88	293	12:15-12:30	65	94	159	06:15-06:30	61	164	225		
12:30-12:45	8	7	15	06:30-06:45	292	83	375	12:30-12:45	91	94	185	06:30-06:45	47	121	168		
12:45-01:00	5	8	13	06:45-07:00	298	105	403	12:45-01:00	119	83	202	06:45-07:00	48	92	140		
01:00-01:15	1	5	6	07:00-07:15	276	66	342	01:00-01:15	84	84	168	07:00-07:15	43	79	122		
01:15-01:30	6	5	11	07:15-07:30	298	62	360	01:15-01:30	102	86	188	07:15-07:30	33	76	109		
01:30-01:45	3	2	5	07:30-07:45	257	82	339	01:30-01:45	83	96	179	07:30-07:45	56	66	122		
01:45-02:00	3	2	5	07:45-08:00	225	86	311	01:45-02:00	78	100	178	07:45-08:00	35	49	84		
02:00-02:15	4	2	6	08:00-08:15	179	110	289	02:00-02:15	68	115	183	08:00-08:15	42	62	104		
02:15-02:30	5	5	10	08:15-08:30	143	74	217	02:15-02:30	76	127	203	08:15-08:30	34	56	90		
02:30-02:45	5	8	13	08:30-08:45	205	66	271	02:30-02:45	80	111	191	08:30-08:45	28	44	66		
02:45-03:00	6	5	11	08:45-09:00	137	59	196	02:45-03:00	82	130	212	08:45-09:00	28	51	79		
03:00-03:15	7	3	10	09:00-09:15	122	52	174	03:00-03:15	76	167	243	09:00-09:15	23	48	71		
03:15-03:30	9	5	14	09:15-09:30	111	80	191	03:15-03:30	87	170	257	09:15-09:30	25	28	53		
03:30-03:45	14	11	25	09:30-09:45	92	65	157	03:30-03:45	141	223	364	09:30-09:45	29	34	63		
03:45-04:00	23	8	29	09:45-10:00	80	68	148	03:45-04:00	122	204	326	09:45-10:00	28	47	75		
04:00-04:15	11	38	49	10:00-10:15	72	52	124	04:00-04:15	128	201	329	10:00-10:15	21	30	51		
04:15-04:30	37	14	51	10:15-10:30	79	67	146	04:15-04:30	103	248	351	10:15-10:30	26	25	51		
04:30-04:45	67	9	76	10:30-10:45	66	77	143	04:30-04:45	100	197	297	10:30-10:45	15	28	43		
04:45-05:00	102	22	124	10:45-11:00	72	74	146	04:45-05:00	107	262	369	10:45-11:00	12	19	31		
05:00-05:15	165	37	202	11:00-11:15	79	85	164	05:00-05:15	90	242	332	11:00-11:15	10	15	25		
05:15-05:30	244	47	291	11:15-11:30	81	89	170	05:15-05:30	77	269	346	11:15-11:30	18	15	33		
05:30-05:45	301	48	349	11:30-11:45	77	105	182	05:30-05:45	76	252	328	11:30-11:45	8	17	23		
05:45-06:00	294	54	348	11:45-12:00	77	114	191	05:45-06:00	75	213	288	11:45-12:00	4	14	18		
AM COMMUTER PERIOD (05:00-09:00)																	
TWO DIRECTIONAL PEAK																	
AM - PEAK HR TIME			DIR 1			DIR 2			PM COMMUTER PERIOD (15:00-19:00)			DIR 1			DIR 2		
AM - PEAK HR VOLUME			1164			316			TWO DIRECTIONAL PEAK			04:45 PM to 05:45 PM			1025		
AM - K FACTOR (%)			78.65			21.35			PM - PEAK HR TIME			74.55			100.00		
AM - D (%)			78.65			21.35			PM - D (%)			74.55			100.00		
AM - PEAK HR VOLUME																	
AM - PEAK HR TIME																	
AM - PEAK HR VOLUME																	
AM - K FACTOR (%)																	
AM - D (%)																	
PM PERIOD (12:00-24:00)																	
TWO DIRECTIONAL PEAK																	
PM - PEAK HR TIME			DIR 1			DIR 2			TWO DIRECTIONAL PEAK			04:45 PM to 05:45 PM			1025		
PM - PEAK HR VOLUME			350			350			PM - PEAK HR TIME			74.55			100.00		
PM - K FACTOR (%)			25.45			25.45			PM - D (%)			74.55			100.00		
NON-COMMUTER PERIOD (09:00-15:00)																	
TWO DIRECTIONAL PEAK																	
PEAK HR TIME			DIR 1			DIR 2			6-HR, 12-HR, 24-HR PERIODS			DIR 1			DIR 2		
PEAK HR VOLUME			306			483			AM 6-HR PERIOD (06:00-12:00)			3,733			1,867		
DIRECTIONAL PEAK			09:00 AM to 10:00 AM			02:00 PM to 03:00 PM			AM 12-HR PERIOD (00:00-12:00)			5,080			2,199		
PEAK HR VOLUME			405			483			PM 6-HR PERIOD (12:00-18:00)			2,193			3,872		
D (%)			405			483			PM 12-HR PERIOD (12:00-24:00)			2,942			5,206		
D (%)			405			483			24 HOUR PERIOD			8,022			7,405		
D (%)			405			483			D (%)			52.00			48.00		
D (%)			405			483			D (%)			52.00			48.00		

Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
2012 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000033
Functional Class: URBAN/PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - KUPUNA LOOP TO BEGINNING OF

Town: Oahu
Count Type: CLASS
DIR 1: +MP
DIR 2: -MP
Counter Type: Tube
Route No: 750
Final AADT: 14500

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 01/26/2012															
12:00-12:15	5	9	14	06:00-06:15	213	72	285	12:00-12:15	80	97	177	06:00-06:15	66	111	177
12:15-12:30	9	10	19	06:15-06:30	236	104	340	12:15-12:30	125	89	214	06:15-06:30	50	90	140
12:30-12:45	5	7	12	06:30-06:45	317	83	400	12:30-12:45	83	86	169	06:30-06:45	43	88	131
12:45-01:00	3	3	6	06:45-07:00	170	84	254	12:45-01:00	102	69	171	06:45-07:00	49	63	112
01:00-01:15	4	7	11	07:00-07:15	246	62	308	01:00-01:15	87	99	186	07:00-07:15	49	60	109
01:15-01:30	3	8	11	07:15-07:30	287	56	343	01:15-01:30	78	96	174	07:15-07:30	48	60	108
01:30-01:45	2	7	9	07:30-07:45	262	65	327	01:30-01:45	80	104	184	07:30-07:45	38	50	88
01:45-02:00	2	4	6	07:45-08:00	234	81	315	01:45-02:00	69	86	155	07:45-08:00	43	56	99
02:00-02:15	3	2	5	08:00-08:15	189	74	263	02:00-02:15	101	106	207	08:00-08:15	40	52	92
02:15-02:30	4	6	10	08:15-08:30	143	81	224	02:15-02:30	83	132	215	08:15-08:30	36	57	93
02:30-02:45	6	8	14	08:30-08:45	200	80	280	02:30-02:45	80	137	217	08:30-08:45	34	48	82
02:45-03:00	1	7	8	08:45-09:00	140	57	197	02:45-03:00	79	173	252	08:45-09:00	20	47	67
03:00-03:15	4	6	10	09:00-09:15	117	69	186	03:00-03:15	84	226	310	09:00-09:15	30	49	79
03:15-03:30	9	4	13	09:15-09:30	116	68	184	03:15-03:30	91	263	354	09:15-09:30	32	29	61
03:30-03:45	22	7	29	09:30-09:45	97	81	178	03:30-03:45	150	288	438	09:30-09:45	33	48	81
03:45-04:00	18	5	23	09:45-10:00	88	76	164	03:45-04:00	127	260	387	09:45-10:00	23	29	52
04:00-04:15	17	13	30	10:00-10:15	81	65	146	04:00-04:15	103	281	384	10:00-10:15	14	40	54
04:15-04:30	27	12	39	10:15-10:30	78	82	160	04:15-04:30	86	268	354	10:15-10:30	19	35	54
04:30-04:45	57	11	68	10:30-10:45	73	73	137	04:30-04:45	101	258	359	10:30-10:45	20	24	44
04:45-05:00	102	23	125	10:45-11:00	75	55	130	04:45-05:00	103	212	315	10:45-11:00	12	23	35
05:00-05:15	156	31	187	11:00-11:15	81	57	138	05:00-05:15	78	210	288	11:00-11:15	14	14	28
05:15-05:30	222	34	256	11:15-11:30	94	79	173	05:15-05:30	70	192	262	11:15-11:30	8	24	32
05:30-05:45	273	37	310	11:30-11:45	88	97	185	05:30-05:45	80	159	239	11:30-11:45	5	16	21
05:45-06:00	243	56	298	11:45-12:00	95	108	203	05:45-06:00	88	134	222	11:45-12:00	11	16	27
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2											
AM - PEAK HR TIME			05:45 AM to 06:45 AM												
AM - PEAK HR VOLUME			1009	314			1323								
AM - K FACTOR (%)			76.27			23.73									
AM - D (%)						100.00									
DIRECTIONAL PEAK			07:00 AM to 08:00 AM			06:00 AM to 07:00 AM									
AM - PEAK HR TIME			1029			343									
AM - PEAK HR VOLUME															
PM COMMUTER PERIOD (15:00-19:00)															
TWO DIRECTIONAL PEAK			03:15 PM to 04:15 PM												
PM - PEAK HR TIME			471			1092									
PM - PEAK HR VOLUME						1563									
PM - K FACTOR (%)			30.13			69.87									
PM - D (%)						100.00									
DIRECTIONAL PEAK			03:15 PM to 04:15 PM			03:30 PM to 04:30 PM									
PM - PEAK HR TIME			471			1097									
PM - PEAK HR VOLUME															
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK			02:00 PM to 03:00 PM												
PEAK HR TIME			343			893									
PEAK HR VOLUME						550									
DIRECTIONAL PEAK			09:00 AM to 10:00 AM			02:00 PM to 03:00 PM									
PEAK HR TIME			418			550									
PEAK HR VOLUME															
6-HR, 12-HR, 24-HR PERIODS															
AM 6-HR PERIOD (06:00-12:00)			DIR 1			DIR 2			Total						
AM 12-HR PERIOD (00:00-12:00)			4.917			2.116			7.033						
PM 6-HR PERIOD (12:00-18:00)			2.208			4.027			6.235						
PM 12-HR PERIOD (12:00-24:00)			2.945			5.161			8.106						
24 HOUR PERIOD			7.862			7.277			15.139						
D (%)			51.93			48.07			100.00						

Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
Highways Planning Survey Section

Vehicle Classification Data Summary
2012

Site ID: B72075000033

Route No: 750

Date From: 2012/01/25 0:00

Town: Oahu

Direction: +MP

Date To: 2012/01/26 23:45

Location: KUNIA ROAD - KUPUNA LOOP TO beginNING OF

Functional Classification: 14 URBAN:PRINCIPAL ARTERIAL - OTHER


REPORT TOTALS - 48 HOURS RECORDED

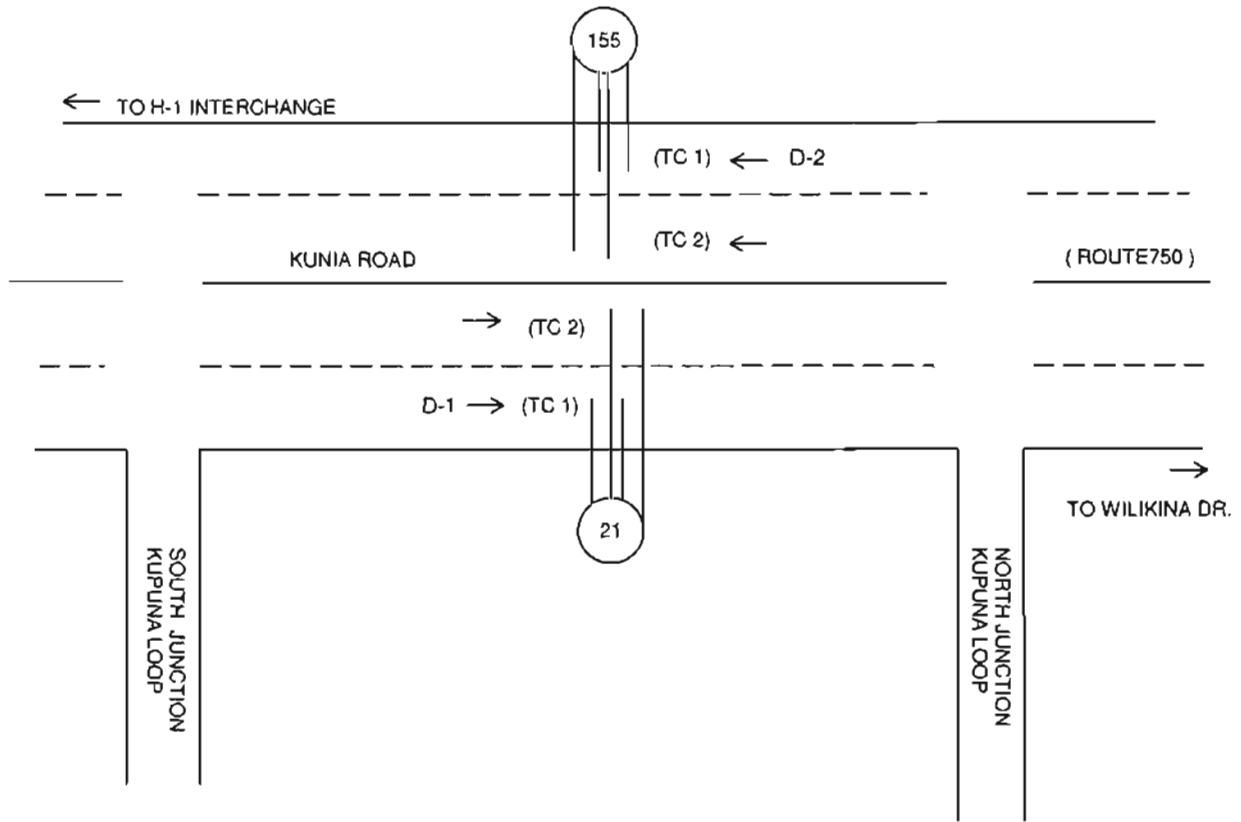
	VOLUME	%	NUMBER OF AXLES
Cycles	196	0.64%	391
PC	23639	77.34%	47278
2A-4T	5775	18.89%	11549
LIGHT VEHICLE TOTALS	29609	96.87%	59219
HEAVY VEHICLES			
Bus	103	0.34%	259
SINGLE UNIT TRUCK			
2A-6T	424	1.39%	848
3A-SU	158	0.52%	474
4A-SU	0	0.00%	0
SINGLE-TRAILER TRUCKS			
4A-ST	45	0.15%	180
5A-ST	217	0.71%	1085
6A-ST	7	0.02%	42
MULTI-TRAILER TRUCKS			
5A-MT	0	0.00%	0
6A-MT	0	0.00%	0
7A-MT	2	0.01%	14
HEAVY VEHICLE TOTALS	956	3.13%	2902
CLASSIFIED VEHICLES TOTALS	30566 (A)	100.00%	62120 (B)
UNCLASSIFIED VEHICLES TOTALS	0	0.00%	

AXLE
CORRECTION
FACTOR (A/C) = 0.984

ROADTUBE
EQUIVALENT(B/2) = 31060 (C)

PEAK HOUR VOLUME : 1489 2012/01/26 15:00	PEAK HOUR TRUCK VOLUME	% TOTAL PEAK HOUR VOLUME	24 HOUR TRUCK VOLUME	AADT	% OF AADT	HPMS K-FACTOR (PEAK/AADT) (ITEM 66)
SINGLE UNIT TRUCKS (TYPE 4-7)	25	(65A-1) 1.69%	341	14500	(65A-2) 2.35%	10.27%
COMBINATION (TYPE 8-13)	12	(65B-1) 0.81%	135		(65B-2) 0.93%	10.27%


ISLAND: OAHU
AREA: KUNIA




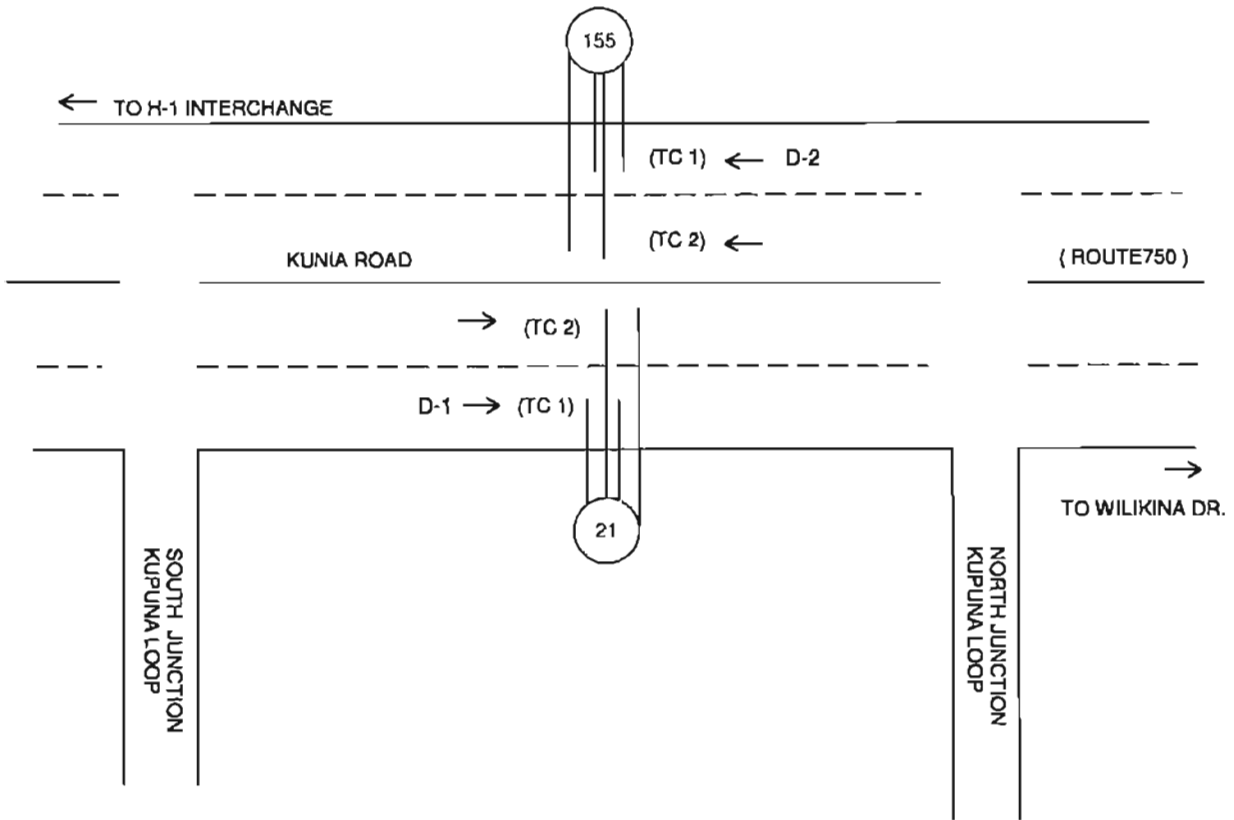
Station No:	B72 0750 00000
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Station Location:			
Kunia Road between South and North junction of Kupuna Loop			
Station Mileage:	0.27	GPS Coord (Latitude):	21.38734 N
		GPS Coord (Longitude):	158.03402 W
Begin Survey (Date/Time):	1/25/12 0000	End Survey (Date/Time):	1/27/12 0000
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:	CA EP CO LT RG	Module No.:	

HPMS DATA							
Segment Description:							
KUNIA ROAD - H-1 FREEWAY TO KUPUNA LOOP (N)							
Segment Begin LRS	0.00	Segment End LRS	0.33	Length	0.33		
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route	
				No.	Mile	D-2 = Direction to Beginning of Route	
KUNIA ROAD	S	14	4	750	0.27	D-1	TO WILIKINA DRIVE
						D-2	TO H-1 OVERPASS

Sketch By:	EPJ	Date:	1/12/2012	SLO:	2009
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ISLAND: OAHU
AREA: KUNIA



Station No.	075-0100-0000
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Kunia Road between South and North junction of Kupuna Loop			
Station Mileage:			
Begin Survey (Date/Time):			
Survey Method: LOOP	TRUCK	OTHER	Survey Type: VOL
Survey Crew:			

HPMS DATA							
Segment Description:							
KUNIA ROAD - H-1 FREEWAY TO KUPUNA LOOP (N)							
						0.33	
Facility Name	Juris	Class	Type	No.	Mile	D-1 - Direction to End of Route	
						D-2 - Direction to Beginning of Route	
KUNIA ROAD	S	14	4	750	0.27	D-1 TO WILIKINA DRIVE	
						D-2 TO H-1 OVERPASS	
Sketch By: LFS		Date: 11/2/2012		SLD:		2009	

Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
2012 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000000
Functional Class: URBAN-PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - H-1 Freeway TO END OF DIVID

Town: Oahu
Count Type: CLASS
DIR 1: +MP
Counter Type: Tube
Route No: 750
Final AADT: 19100

DATE : 01/25/2012
TIME-AM DIR 1 DIR 2 TOTAL TIME-AM DIR 1 DIR 2 TOTAL TIME-PM DIR 1 DIR 2 TOTAL TIME-PM DIR 1 DIR 2 TOTAL

12:00-12:15	18	15	33	06:00-06:15	230	104	334	12:00-12:15	124	140	264	06:00-06:15	191	201	392
12:15-12:30	16	7	23	06:15-06:30	221	123	344	12:15-12:30	95	115	210	06:15-06:30	132	199	331
12:30-12:45	12	9	21	06:30-06:45	202	144	346	12:30-12:45	129	139	268	06:30-06:45	139	159	298
12:45-01:00	13	18	31	06:45-07:00	208	149	357	12:45-01:00	141	124	265	06:45-07:00	135	117	252
01:00-01:15	6	4	10	07:00-07:15	223	171	394	01:00-01:15	146	124	270	07:00-07:15	97	105	202
01:15-01:30	9	5	14	07:15-07:30	220	123	343	01:15-01:30	114	124	238	07:15-07:30	93	79	172
01:30-01:45	8	6	14	07:30-07:45	228	154	382	01:30-01:45	114	129	243	07:30-07:45	102	89	191
01:45-02:00	8	3	11	07:45-08:00	190	154	344	01:45-02:00	128	129	257	07:45-08:00	95	66	165
02:00-02:15	5	4	9	08:00-08:15	198	108	306	02:00-02:15	119	150	269	08:00-08:15	93	63	156
02:15-02:30	5	7	12	08:15-08:30	181	130	311	02:15-02:30	115	162	277	08:15-08:30	90	88	178
02:30-02:45	6	5	11	08:30-08:45	184	132	316	02:30-02:45	124	128	252	08:30-08:45	76	51	127
02:45-03:00	9	10	19	08:45-09:00	153	93	246	02:45-03:00	117	146	263	08:45-09:00	68	65	133
03:00-03:15	10	5	15	09:00-09:15	109	107	202	03:00-03:15	133	199	332	09:00-09:15	86	55	141
03:15-03:30	13	12	25	09:15-09:30	104	107	211	03:15-03:30	164	193	357	09:15-09:30	71	60	131
03:30-03:45	18	19	37	09:30-09:45	115	106	221	03:30-03:45	180	267	447	09:30-09:45	60	40	100
03:45-04:00	21	21	42	09:45-10:00	94	91	185	03:45-04:00	175	261	436	09:45-10:00	62	45	107
04:00-04:15	23	30	53	10:00-10:15	92	98	190	04:00-04:15	177	222	399	10:00-10:15	49	45	94
04:15-04:30	35	34	69	10:15-10:30	119	99	218	04:15-04:30	162	285	447	10:15-10:30	54	31	85
04:30-04:45	76	39	115	10:30-10:45	78	106	184	04:30-04:45	162	209	371	10:30-10:45	33	37	70
04:45-05:00	100	70	170	10:45-11:00	102	112	214	04:45-05:00	177	291	468	10:45-11:00	42	26	68
05:00-05:15	170	82	252	11:00-11:15	99	106	205	05:00-05:15	172	257	429	11:00-11:15	22	24	46
05:15-05:30	207	123	330	11:15-11:30	110	137	247	05:15-05:30	161	293	454	11:15-11:30	32	19	51
05:30-05:45	212	122	334	11:30-11:45	86	132	218	05:30-05:45	146	268	414	11:30-11:45	24	19	43
05:45-06:00	238	129	367	11:45-12:00	107	125	232	05:45-06:00	134	263	397	11:45-12:00	19	16	35

AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK		DIR 1	DIR 2	TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
AM - PEAK HR TIME	08:45 AM to 07:45 AM	879	597	1476	597	1476	597	1476	597	1476	597	1476	597	1476	1765
AM - PEAK HR VOLUME		879	597	1476	597	1476	597	1476	597	1476	597	1476	597	1476	1765
AM - K FACTOR (%)		7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	8.75
AM - D (%)		59.55	40.45	100.00	40.45	100.00	40.45	100.00	40.45	100.00	40.45	100.00	40.45	100.00	100.00
DIRECTIONAL PEAK		AM - PEAK HR TIME		05:30 AM to 06:30 AM		07:00 AM to 08:00 AM		PM PERIOD (15:00-19:00)		DIR 1		DIR 2		TOTAL	
AM - PEAK HR VOLUME		901		602		1503		696		696		1109		1109	
AM - PEAK HR VOLUME		901		602		1503		696		696		1109		1109	
AM - K FACTOR (%)		60.2		60.2		60.2		60.2		60.2		60.2		60.2	
AM - D (%)		60.2		60.2		60.2		60.2		60.2		60.2		60.2	
DIRECTIONAL PEAK		PM - PEAK HR TIME		03:15 PM to 04:15 PM		04:45 PM to 05:45 PM		696		696		1109		1109	
AM - PEAK HR VOLUME		696		1109		1805		696		696		1109		1109	
AM - PEAK HR VOLUME		696		1109		1805		696		696		1109		1109	
AM - K FACTOR (%)		60.2		60.2		60.2		60.2		60.2		60.2		60.2	
AM - D (%)		60.2		60.2		60.2		60.2		60.2		60.2		60.2	

AM PERIOD (00:00-12:00)															
TWO DIRECTIONAL PEAK		06:45 AM to 07:45 AM		597		1476		597		1476		597		1476	
AM - PEAK HR TIME		06:45 AM to 07:45 AM		597		1476		597		1476		597		1476	
AM - PEAK HR VOLUME		597		1476		597		1476		597		1476		1765	
AM - K FACTOR (%)		7.32		7.32		7.32		7.32		7.32		7.32		8.75	
AM - D (%)		59.55		40.45		100.00		40.45		100.00		40.45		100.00	

NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK		02:00 PM to 03:00 PM		475		586		1061		475		586		1061	
PEAK HR TIME		02:00 PM to 03:00 PM		475		586		1061		475		586		1061	
PEAK HR VOLUME		475		586		1061		475		586		1061		1061	
DIRECTIONAL PEAK		12:30 PM to 01:30 PM		530		586		1116		530		586		1116	
PEAK HR TIME		12:30 PM to 01:30 PM		530		586		1116		530		586		1116	
PEAK HR VOLUME		530		586		1116		530		586		1116		1116	
D (%)		50.41		49.59		100.00		49.59		100.00		49.59		100.00	

Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
2012 Program Count - Summary
Highways Planning Survey Section

Site ID: 872075000000

Town: Oahu

DIR 1: +MP DIR 2: -MP

Final ADT: 19100

Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - H-1 Freeway TO END OF DIVID

Count Type: CLASS

Counter Type: Tube

Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 01/26/2012															
12:00-12:15	17	17	34	06:00-06:15	236	130	366	12:00-12:15	122	138	260	06:00-06:15	135	145	280
12:15-12:30	13	14	27	06:15-06:30	232	118	350	12:15-12:30	121	104	225	06:15-06:30	143	134	277
12:30-12:45	10	15	25	06:30-06:45	223	137	360	12:30-12:45	128	122	250	06:30-06:45	140	119	259
12:45-01:00	10	7	17	06:45-07:00	228	155	383	12:45-01:00	117	119	236	06:45-07:00	114	102	216
01:00-01:15	10	11	21	07:00-07:15	222	160	382	01:00-01:15	106	118	224	07:00-07:15	106	72	178
01:15-01:30	8	7	15	07:15-07:30	236	128	364	01:15-01:30	102	120	222	07:15-07:30	124	75	199
01:30-01:45	4	10	14	07:30-07:45	299	128	385	01:30-01:45	118	140	258	07:30-07:45	75	86	141
01:45-02:00	9	7	16	07:45-08:00	206	124	330	01:45-02:00	120	136	256	07:45-08:00	71	67	138
02:00-02:15	5	7	12	08:00-08:15	165	124	289	02:00-02:15	101	138	237	08:00-08:15	88	71	159
02:15-02:30	8	4	12	08:15-08:30	171	130	301	02:15-02:30	114	174	288	08:15-08:30	112	67	179
02:30-02:45	4	11	15	08:30-08:45	134	111	245	02:30-02:45	143	162	305	08:30-08:45	86	60	146
02:45-03:00	3	12	15	08:45-09:00	143	106	249	02:45-03:00	143	173	316	08:45-09:00	73	56	129
03:00-03:15	5	10	15	09:00-09:15	125	106	231	03:00-03:15	134	246	380	09:00-09:15	66	65	131
03:15-03:30	12	16	28	09:15-09:30	105	114	219	03:15-03:30	149	277	426	09:15-09:30	83	43	126
03:30-03:45	23	14	37	09:30-09:45	102	103	205	03:30-03:45	156	311	467	09:30-09:45	80	57	137
03:45-04:00	18	13	31	09:45-10:00	106	103	209	03:45-04:00	130	329	452	09:45-10:00	44	44	88
04:00-04:15	16	27	43	10:00-10:15	83	98	181	04:00-04:15	180	315	495	10:00-10:15	56	39	95
04:15-04:30	26	25	52	10:15-10:30	108	117	225	04:15-04:30	180	305	485	10:15-10:30	36	50	86
04:30-04:45	73	47	120	10:30-10:45	88	101	189	04:30-04:45	183	273	456	10:30-10:45	41	29	70
04:45-05:00	100	67	167	10:45-11:00	93	91	184	04:45-05:00	176	242	418	10:45-11:00	29	30	59
05:00-05:15	155	80	235	11:00-11:15	99	78	178	05:00-05:15	165	235	400	11:00-11:15	29	20	49
05:15-05:30	215	103	318	11:15-11:30	109	98	207	05:15-05:30	185	248	433	11:15-11:30	35	27	62
05:30-05:45	269	118	387	11:30-11:45	122	123	245	05:30-05:45	171	266	377	11:30-11:45	18	15	33
05:45-06:00	242	119	361	11:45-12:00	105	125	230	05:45-06:00	144	163	307	11:45-12:00	22	18	40
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL	TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL
AM - PEAK HR TIME			06:45 AM to 07:45 AM	AM - PEAK HR TIME			1514	PM - PEAK HR TIME			03:30 PM to 04:30 PM	AM - PEAK HR TIME			1929
AM - PEAK HR VOLUME			945	AM - PEAK HR VOLUME			569	PM - PEAK HR VOLUME			1260	AM - PEAK HR VOLUME			9.64
AM - K FACTOR (%)			7.57	AM - K FACTOR (%)			7.57	PM - K FACTOR (%)			9.64	AM - K FACTOR (%)			100.00
AM - D (%)			100.00	AM - D (%)			100.00	PM - D (%)			100.00	AM - D (%)			100.00
DIRECTIONAL PEAK			AM - PEAK HR TIME	DIRECTIONAL PEAK			PM - PEAK HR TIME	DIRECTIONAL PEAK			AM - PEAK HR TIME	DIRECTIONAL PEAK			PM - PEAK HR TIME
AM - PEAK HR TIME			05:30 AM to 06:30 AM	AM - PEAK HR TIME			580	PM - PEAK HR TIME			04:00 PM to 05:00 PM	AM - PEAK HR TIME			03:30 PM to 04:30 PM
AM - PEAK HR VOLUME			979	AM - PEAK HR VOLUME			580	PM - PEAK HR VOLUME			719	AM - PEAK HR VOLUME			1260
AM - D (%)			100.00	AM - D (%)			100.00	PM - D (%)			100.00	AM - D (%)			100.00
AM PERIOD (00:00-12:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL	TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL
AM - PEAK HR TIME			06:45 AM to 07:45 AM	AM - PEAK HR TIME			1514	PM - PEAK HR TIME			03:30 PM to 04:30 PM	AM - PEAK HR TIME			1929
AM - PEAK HR VOLUME			945	AM - PEAK HR VOLUME			569	PM - PEAK HR VOLUME			1260	AM - PEAK HR VOLUME			9.64
AM - K FACTOR (%)			7.57	AM - K FACTOR (%)			7.57	PM - K FACTOR (%)			9.64	AM - K FACTOR (%)			100.00
AM - D (%)			100.00	AM - D (%)			100.00	PM - D (%)			100.00	AM - D (%)			100.00
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL	TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TOTAL
PEAK HR TIME			02:00 PM to 03:00 PM	PEAK HR TIME			1146	6-HR, 12-HR, 24-HR PERIODS			DIR 1	DIR 2	Total		
PEAK HR VOLUME			501	PEAK HR VOLUME			645	AM 6-HR PERIOD (06:00-12:00)	3,700	2,807	6,507	AM 6-HR PERIOD (06:00-12:00)	4,955	3,569	8,524
DIRECTIONAL PEAK			02:00 PM to 03:00 PM	DIRECTIONAL PEAK			645	AM 12-HR PERIOD (00:00-12:00)	3,411	4,792	8,203	AM 12-HR PERIOD (00:00-12:00)	5,217	6,263	11,480
PEAK HR TIME			02:00 PM to 03:00 PM	PEAK HR TIME			645	PM 12-HR PERIOD (12:00-24:00)	10,172	9,832	20,004	PM 12-HR PERIOD (12:00-24:00)	10,172	9,832	20,004
PEAK HR VOLUME			501	PEAK HR VOLUME			645	24 HOUR PERIOD	50,855	49,115	100,000	24 HOUR PERIOD	50,855	49,115	100,000
D (%)			100.00	D (%)			100.00	D (%)			100.00	D (%)			100.00

Run Date: 2013/03/12

Hawaii Department of Transportation
Highways Division
Highways Planning Survey Section

Vehicle Classification Data Summary
2012

Site ID: B72075000000 Route No: 750 Date From: 2012/01/25 0:00
Town: Oahu Direction: +MP Date To: 2012/01/26 23:45
Location: KUNIA ROAD - H-1 Freeway TO END OF DIVID


Functional Classification: 14 URBAN:PRINCIPAL ARTERIAL - OTHER
REPORT TOTALS - 48 HOURS RECORDED

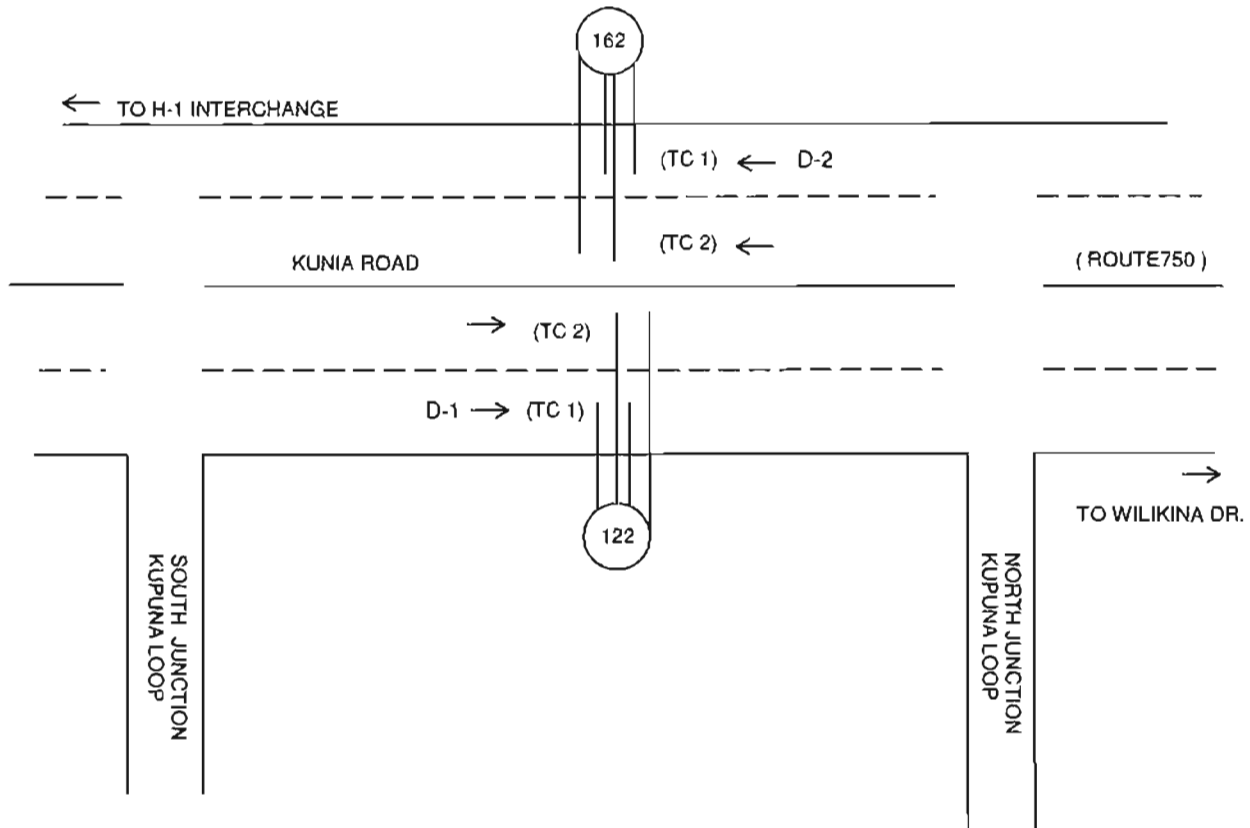
	VOLUME	%	NUMBER OF AXLES
Cycles	1101	2.74%	2202
PC	32072	79.83%	64145
2A-4T	6079	15.13%	12159
LIGHT VEHICLE TOTALS	39252	97.70%	78505
HEAVY VEHICLES			
Bus	88	0.22%	219
<u>SINGLE UNIT TRUCK</u>			
2A-6T	334	0.83%	668
3A-SU	151	0.37%	453
4A-SU	53	0.13%	212
<u>SINGLE-TRAILER TRUCKS</u>			
4A-ST	53	0.13%	212
5A-ST	124	0.31%	620
6A-ST	55	0.14%	330
<u>MULTI-TRAILER TRUCKS</u>			
5A-MT	0	0.00%	0
6A-MT	0	0.00%	0
7A-MT	67	0.17%	469
HEAVY VEHICLE TOTALS	923	2.30%	3183
CLASSIFIED VEHICLES TOTALS	40176 (A)	100.00%	81688 (B)
UNCLASSIFIED VEHICLES TOTALS	1	0.00%	

AXLE
CORRECTION
FACTOR (A/C) = 0.984

ROADTUBE
EQUIVALENT(B/2) = 40844 (C)

PEAK HOUR VOLUME : 1854 2012/01/26 16:00	PEAK HOUR TRUCK VOLUME	% TOTAL PEAK HOUR VOLUME	24 HOUR TRUCK VOLUME	AADT	% OF AADT	HPMS K-FACTOR (PEAK/AADT) (ITEM 66)
SINGLE UNIT TRUCKS (TYPE 4-7)	22	(65A-1) 1.23%	303	19100	(65A-2) 1.59%	9.71%
COMBINATION (TYPE 8-13)	5	(65B-1) 0.28%	144		(65B-2) 0.75%	9.71%


ISLAND: OAHU
AREA: KUNIA



Station No: B72 0750 00017

Station Location:			
Kunia Road between South and North junction of Kupuna Loop			
Station Mileage:	0.27	GPS Coord (Latitude):	21.38734 N
		GPS Coord (Longitude):	158.03402 W
Begin Survey (Date/Time):	8-3-11 0000	End Survey (Date/Time):	8-5-11 0000
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:	CA, EP, CO, LT, RG	Module No.:	

HPMS DATA							
Segment Description:							
KUNIA ROAD - END OF 5 LANES TO KUPUNA LOOP							
Segment Begin LRS	0.17	Segment End LRS	0.33	Length	0.16		
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route	
				No.	Mile	D-2 = Direction to Beginning of Route	
KUNIA ROAD	S	14	4	750	0.27	D-1	TO WILIKINA DRIVE
						D-2	TO H-1 OVERPASS

Sketch By: EPJ Date: 5/18/2011 SLD: 2009

Run Date: 2011/09/08

Hawaii Department of Transportation
Highways Division
2011 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000017
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: Kuniia Road : end of 5 lane section > Kup

Town: Oahu
Count Type: CLASS
DIR 1: +MP
DIR 2: -MP
Counter Type: Tube
Final AADT: 0
Route No.: 750


TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 08/03/2011															
12:00-12:15	36	32	68	06:00-06:15	272	167	439	12:00-12:15	198	183	381	06:00-06:15	235	235	470
12:15-12:30	24	23	47	06:15-06:30	277	195	472	12:15-12:30	202	209	411	06:15-06:30	229	238	467
12:30-12:45	27	29	56	06:30-06:45	278	180	458	12:30-12:45	204	200	404	06:30-06:45	217	182	399
12:45-01:00	21	23	44	06:45-07:00	292	193	485	12:45-01:00	190	186	376	06:45-07:00	240	215	455
01:00-01:15	24	13	37	07:00-07:15	237	195	432	01:00-01:15	168	214	382	07:00-07:15	190	188	378
01:15-01:30	23	29	52	07:15-07:30	256	172	430	01:15-01:30	213	210	423	07:15-07:30	197	174	371
01:30-01:45	20	19	39	07:30-07:45	230	170	400	01:30-01:45	211	188	399	07:30-07:45	202	186	388
01:45-02:00	21	23	44	07:45-08:00	201	170	371	01:45-02:00	208	199	407	07:45-08:00	175	165	340
02:00-02:15	13	8	21	08:00-08:15	191	136	327	02:00-02:15	207	190	397	08:00-08:15	173	131	304
02:15-02:30	14	15	29	08:15-08:30	192	146	338	02:15-02:30	185	207	392	08:15-08:30	155	146	301
02:30-02:45	18	14	32	08:30-08:45	182	158	340	02:30-02:45	194	196	390	08:30-08:45	153	146	299
02:45-03:00	8	14	22	08:45-09:00	209	142	351	02:45-03:00	249	188	437	08:45-09:00	172	152	324
03:00-03:15	5	10	15	09:00-09:15	156	134	290	03:00-03:15	240	233	473	08:45-09:15	129	120	249
03:15-03:30	17	20	37	09:15-09:30	162	136	298	03:15-03:30	259	243	502	09:15-09:30	169	122	291
03:30-03:45	17	21	38	09:30-09:45	173	152	325	03:30-03:45	284	291	575	09:30-09:45	150	117	267
03:45-04:00	25	23	48	09:45-10:00	164	156	330	03:45-04:00	257	322	579	09:45-10:00	137	121	258
04:00-04:15	30	31	61	10:00-10:15	190	153	343	04:00-04:15	249	249	516	10:00-10:15	102	130	232
04:15-04:30	45	49	94	10:15-10:30	166	189	355	04:15-04:30	249	323	572	10:15-10:30	98	91	184
04:30-04:45	75	61	136	10:30-10:45	199	137	336	04:30-04:45	252	280	532	10:30-10:45	78	84	162
04:45-05:00	88	97	185	10:45-11:00	197	147	344	04:45-05:00	250	298	548	10:45-11:00	79	61	140
05:00-05:15	143	140	283	11:00-11:15	203	178	381	05:00-05:15	250	268	516	11:00-11:15	63	68	131
05:15-05:30	180	155	335	11:15-11:30	197	144	341	05:15-05:30	252	257	509	11:15-11:30	72	67	139
05:30-05:45	242	146	388	11:30-11:45	174	195	370	05:30-05:45	250	290	540	11:30-11:45	51	58	109
05:45-06:00	245	151	396	11:45-12:00	166	208	374	05:45-06:00	248	282	530	11:45-12:00	52	60	112
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK															
AM - PEAK HR TIME	1119		06:00 AM to 07:00 AM	DIR 1	DIR 2	735		PM - PEAK HR TIME	1057		03:30 PM to 04:30 PM	DIR 1	DIR 2	2242	
AM - PEAK HR VOLUME	1854					631		PM - PEAK HR VOLUME	1185					763	
AM - K FACTOR (%)	6.31					100.00		PM - K FACTOR (%)	47.15					52.85	
AM - D (%)	39.64					100.00		PM - D (%)	47.15					52.85	
DIRECTIONAL PEAK	60.36					100.00		DIRECTIONAL PEAK	47.15					100.00	
AM - PEAK HR TIME	06:00 AM to 07:00 AM		DIR 1	DIR 2	06:15 AM to 07:15 AM		PM - PEAK HR TIME	03:15 PM to 04:15 PM		DIR 1	DIR 2	03:30 PM to 04:30 PM			
AM - PEAK HR VOLUME	763				763		PM - PEAK HR VOLUME	1195				1195			
AM - K FACTOR (%)	1119				735		PM - K FACTOR (%)	6.31				100.00			
AM - D (%)	60.36				39.64		PM - D (%)	47.15				52.85			
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK															
PEAK HR TIME	01:15 PM to 02:15 PM		DIR 1	DIR 2	01:15 PM to 02:15 PM		PEAK HR TIME	01:15 PM to 02:15 PM		DIR 1	DIR 2	01:15 PM to 02:15 PM			
PEAK HR VOLUME	839				787		PEAK HR VOLUME	1626				1626			
DIRECTIONAL PEAK	839				811		DIRECTIONAL PEAK	811				811			
PEAK HR TIME	01:15 PM to 02:15 PM		DIR 1	DIR 2	01:00 PM to 02:00 PM		PEAK HR TIME	01:15 PM to 02:15 PM		DIR 1	DIR 2	01:15 PM to 02:15 PM			
PEAK HR VOLUME	839				811		PEAK HR VOLUME	811				811			
D (%)	839				811		D (%)	811				811			

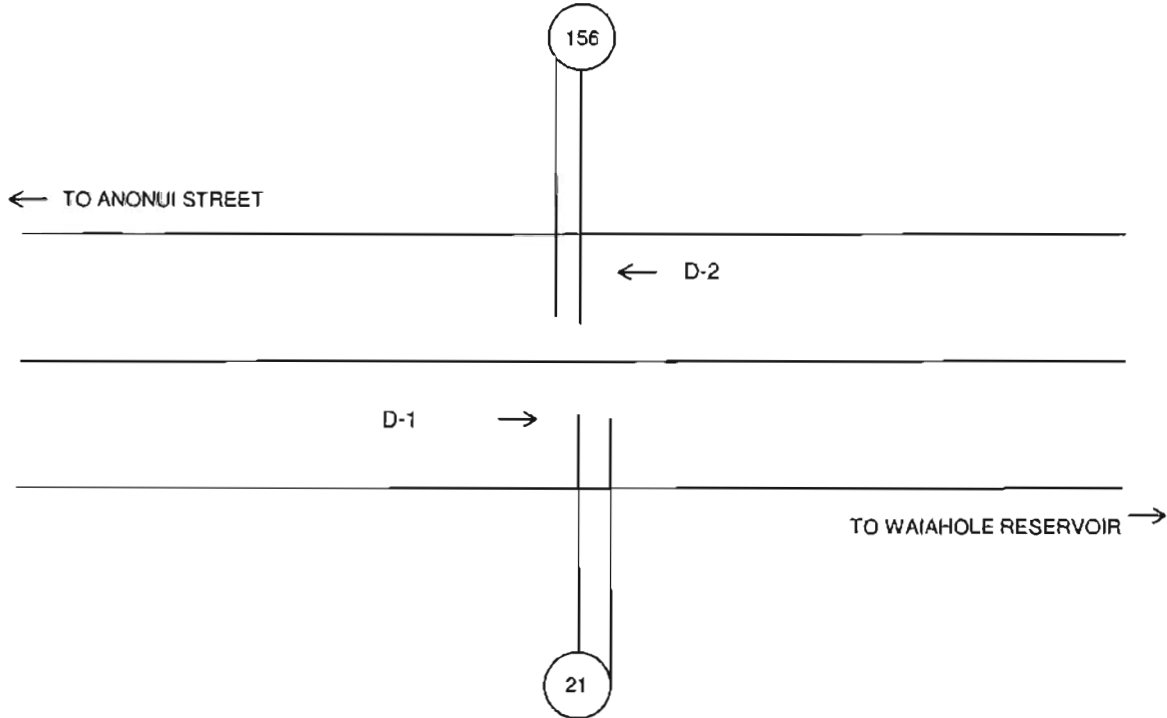
Run Date: 2011/09/08

Hawaii Department of Transportation
Highways Division
2011 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000017
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: Kunia Road : end of 5 lane section > Kup
Town: Oahu
Count Type: CLASS
Counter Type: Tube
DIR 1 : +MP
DIR 2: -MP
Final AADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	
DATE : 08/04/2011																
12:00-12:15	42	36	78	06:00-06:15	298	181	479	12:00-12:15	214	189	403	06:00-06:15	212	217	429	
12:15-12:30	37	37	74	06:15-06:30	309	177	486	12:15-12:30	199	163	362	06:15-06:30	223	196	419	
12:30-12:45	40	43	83	06:30-06:45	306	153	459	12:30-12:45	198	198	396	06:30-06:45	201	207	408	
12:45-01:00	31	28	59	06:45-07:00	259	209	468	12:45-01:00	182	177	359	06:45-07:00	206	187	393	
01:00-01:15	24	21	45	07:00-07:15	257	206	463	01:00-01:15	166	185	351	07:00-07:15	227	185	392	
01:15-01:30	27	28	55	07:15-07:30	245	199	444	01:15-01:30	200	171	371	07:15-07:30	196	167	363	
01:30-01:45	22	28	50	07:30-07:45	197	164	361	01:30-01:45	184	192	376	07:30-07:45	207	167	374	
01:45-02:00	18	16	34	07:45-08:00	221	146	367	01:45-02:00	196	209	405	07:45-08:00	186	150	336	
02:00-02:15	13	21	34	08:00-08:15	217	164	381	02:00-02:15	174	184	358	08:00-08:15	166	153	319	
02:15-02:30	20	14	34	08:15-08:30	187	165	352	02:15-02:30	216	195	412	08:15-08:30	177	125	302	
02:30-02:45	19	12	31	08:30-08:45	161	146	307	02:30-02:45	229	206	435	08:30-08:45	163	142	305	
02:45-03:00	14	14	28	08:45-09:00	164	154	318	02:45-03:00	234	238	472	08:45-09:00	182	139	321	
03:00-03:15	10	12	22	09:00-09:15	165	146	311	03:00-03:15	240	257	497	09:00-09:15	150	138	288	
03:15-03:30	15	18	33	09:15-09:30	166	176	342	03:15-03:30	237	301	538	09:15-09:30	165	130	295	
03:30-03:45	19	27	46	09:30-09:45	194	152	346	03:30-03:45	220	273	493	09:30-09:45	128	113	241	
03:45-04:00	22	21	43	09:45-10:00	154	168	322	03:45-04:00	229	321	550	09:45-10:00	145	119	264	
04:00-04:15	33	39	72	10:00-10:15	196	151	347	04:00-04:15	208	910	518	10:00-10:15	134	108	242	
04:15-04:30	45	32	77	10:15-10:30	167	153	320	04:15-04:30	251	321	572	10:15-10:30	97	114	211	
04:30-04:45	75	86	161	10:30-10:45	170	175	345	04:30-04:45	264	281	545	10:30-10:45	90	81	171	
04:45-05:00	76	92	168	10:45-11:00	191	138	329	04:45-05:00	239	273	512	10:45-11:00	77	75	152	
05:00-05:15	120	130	250	11:00-11:15	197	156	353	05:00-05:15	228	290	518	11:00-11:15	82	59	131	
05:15-05:30	168	161	329	11:15-11:30	176	175	351	05:15-05:30	244	271	515	11:15-11:30	72	65	137	
05:30-05:45	219	154	373	11:30-11:45	192	175	367	05:30-05:45	235	221	456	11:30-11:45	59	59	112	
05:45-06:00	249	154	403	11:45-12:00	181	192	373	05:45-06:00	228	219	447	11:45-12:00	48	39	87	
AM COMMUTER PERIOD (05:00-09:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL			PM COMMUTER PERIOD (15:00-19:00)			DIR 1	DIR 2	TOTAL			
AM - PEAK HR TIME	06:00 AM to 07:00 AM			AM - PEAK HR TIME	06:00 AM to 07:00 AM			PM - PEAK HR TIME	03:45 PM to 04:45 PM			PM - PEAK HR TIME	03:45 PM to 04:45 PM			
AM - PEAK HR VOLUME	720			AM - PEAK HR VOLUME	720			PM - PEAK HR VOLUME	1233			PM - PEAK HR VOLUME	1233			
AM - K FACTOR (%)	6.50			AM - K FACTOR (%)	6.50			PM - K FACTOR (%)	7.50			PM - K FACTOR (%)	7.50			
AM - D (%)	100.00			AM - D (%)	100.00			PM - D (%)	56.43			PM - D (%)	100.00			
DIRECTIONAL PEAK																
AM - PEAK HR TIME	06:00 AM to 07:00 AM			AM - PEAK HR TIME	06:45 AM to 07:45 AM			PM - PEAK HR TIME	04:15 PM to 05:15 PM			PM - PEAK HR TIME	03:45 PM to 04:45 PM			
AM - PEAK HR VOLUME	778			AM - PEAK HR VOLUME	778			PM - PEAK HR VOLUME	982			PM - PEAK HR VOLUME	1233			
AM PERIOD (06:00-12:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL			PM PERIOD (12:00-24:00)			DIR 1	DIR 2	TOTAL			
AM - PEAK HR TIME	06:00 AM to 07:00 AM			AM - PEAK HR TIME	06:00 AM to 07:00 AM			PM - PEAK HR TIME	03:45 PM to 04:45 PM			PM - PEAK HR TIME	03:45 PM to 04:45 PM			
AM - PEAK HR VOLUME	720			AM - PEAK HR VOLUME	720			PM - PEAK HR VOLUME	1233			PM - PEAK HR VOLUME	1233			
AM - K FACTOR (%)	6.50			AM - K FACTOR (%)	6.50			PM - K FACTOR (%)	7.50			PM - K FACTOR (%)	7.50			
AM - D (%)	100.00			AM - D (%)	100.00			PM - D (%)	56.43			PM - D (%)	100.00			
NON-COMMUTER PERIOD (09:00-15:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL			6-HR, 12-HR, 24-HR PERIODS			DIR 1	DIR 2	Total			
PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			AM 6-HR PERIOD (06:00-12:00)	4,970			AM 6-HR PERIOD (06:00-12:00)	4,970			
PEAK HR VOLUME	824			PEAK HR VOLUME	824			AM 12-HR PERIOD (00:00-12:00)	5,245			AM 12-HR PERIOD (00:00-12:00)	5,245			
DIRECTIONAL PEAK	1677			DIRECTIONAL PEAK	1677			PM 6-HR PERIOD (12:00-18:00)	5,646			PM 6-HR PERIOD (12:00-18:00)	5,646			
PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			PM 12-HR PERIOD (12:00-24:00)	8,788			PM 12-HR PERIOD (12:00-24:00)	8,788			
PEAK HR VOLUME	824			PEAK HR VOLUME	824			24 HOUR PERIOD	15,116			24 HOUR PERIOD	15,116			
D (%)	51.92			D (%)	51.92				48.08				48.08			


ISLAND: OAHU
AREA: KUNIA



Station No:	B72 0750 00094
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Station Location:			
Kunia Road between Anonui Street and Waiahole Reservoir			
Station Mileage:	1.20	GPS Coord (Latitude):	21.40425 N
		GPS Coord (Longitude):	158.04129 W
Begin Survey (Date/Time):	8-3-11 000	End Survey (Date/Time):	8-5-11 0000
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:	CA, EP, CO, LT, RG	Module No.:	

HPMS DATA						
Segment Description:						
KUNIA ROAD - ANONUUI STREET TO END OF URBANIZE BOUNDARY						
Segment Begin LRS	0.94	Segment End LRS	2.00	Length	1.06	
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route
				No.	Mile	D-2 = Direction to Beginning of Route
KUNIA ROAD	S	14	4	750	1.20	D-1 TO WILIKINA DRIVE
						D-2 TO H-1 OVERPASS

Sketch By:	EPJ	Date:	5/18/2011	SLD:	2009
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Run Date: 2011/09/08

Hawaii Department of Transportation
Highways Division

Highways Planning Survey Section

2011 Program Count - Summary

Site ID: B72075000094
 Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
 Location: KUNIA ROAD - begin 2 LANES TO URB

Town: Oahu
 Count Type: CLASS
 Counter Type: Tube

DIR 1: +MP
 DIR 2: -MP
 Final AADT: 0
 Route No: 750


TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 08/03/2011															
12:00-12:15	8	14	22	06:00-06:15	229	90	319	12:00-12:15	103	94	197	06:00-06:15	69	159	228
12:15-12:30	7	8	15	06:15-06:30	235	86	320	12:15-12:30	98	87	186	06:15-06:30	44	113	157
12:30-12:45	5	8	13	06:30-06:45	235	71	306	12:30-12:45	98	86	184	06:30-06:45	56	84	140
12:45-01:00	6	9	15	06:45-07:00	256	77	333	12:45-01:00	102	85	187	06:45-07:00	49	113	162
01:00-01:15	2	4	6	07:00-07:15	248	50	296	01:00-01:15	87	100	187	07:00-07:15	59	71	130
01:15-01:30	4	4	8	07:15-07:30	204	66	270	01:15-01:30	84	91	175	07:15-07:30	50	77	127
01:30-01:45	5	5	10	07:30-07:45	189	82	271	01:30-01:45	94	95	189	07:30-07:45	49	82	131
01:45-02:00	6	5	11	07:45-08:00	147	82	229	01:45-02:00	96	79	175	07:45-08:00	50	54	104
02:00-02:15	0	5	5	08:00-08:15	148	74	222	02:00-02:15	79	113	192	08:00-08:15	39	58	97
02:15-02:30	1	4	5	08:15-08:30	166	80	246	02:15-02:30	72	102	174	08:15-08:30	39	63	102
02:30-02:45	5	5	10	08:30-08:45	141	88	209	02:30-02:45	88	115	203	08:30-08:45	23	44	67
02:45-03:00	2	3	5	08:45-09:00	113	56	169	02:45-03:00	81	115	196	08:45-09:00	34	42	76
03:00-03:15	3	2	5	09:00-09:15	102	54	156	03:00-03:15	93	164	257	09:00-09:15	26	42	68
03:15-03:30	4	2	6	09:15-09:30	65	51	116	03:15-03:30	97	201	298	09:15-09:30	36	50	86
03:30-03:45	7	6	13	09:30-09:45	100	84	184	03:30-03:45	129	213	342	09:30-09:45	19	34	53
03:45-04:00	13	8	21	09:45-10:00	98	72	170	04:00-04:15	105	209	314	09:45-10:00	18	37	55
04:00-04:15	18	9	27	10:00-10:15	75	67	142	04:15-04:30	106	271	377	10:00-10:15	25	45	70
04:15-04:30	25	21	46	10:15-10:30	76	59	135	04:30-04:45	84	214	298	10:15-10:30	20	31	51
04:30-04:45	80	15	95	10:30-10:45	93	57	150	04:45-05:00	71	203	274	10:30-10:45	14	17	31
04:45-05:00	79	13	92	10:45-11:00	75	59	134	05:00-05:15	75	216	291	11:00-11:15	20	22	42
05:00-05:15	112	31	143	11:00-11:15	92	93	185	05:15-05:30	77	230	307	11:15-11:30	10	12	22
05:15-05:30	231	37	268	11:30-11:45	102	81	183	05:30-05:45	74	189	263	11:30-11:45	6	8	14
05:30-05:45	290	46	296	11:45-12:00	88	109	197	05:45-06:00	81	159	240	11:45-12:00	11	18	29
05:45-06:00	226	60	286												
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK															
AM - PEAK HR TIME	955			06:00 AM to 07:00 AM	323			12:78	450			03:30 PM to 04:30 PM	947		
AM - PEAK HR VOLUME	955				323			8.81	450				1397		
AM - K FACTOR (%)	74.73				25.27			100.00	32.21				67.79		
AM - D (%)															
DIRECTIONAL PEAK															
AM - PEAK HR TIME	06:15 AM to 07:15 AM			06:00 AM to 07:00 AM						03:30 PM to 04:30 PM			03:45 PM to 04:45 PM		
AM - PEAK HR VOLUME	972			323						450			948		
AM - D (%)															
AM PERIOD (06:00-12:00)															
TWO DIRECTIONAL PEAK															
AM - PEAK HR TIME	06:00 AM to 07:00 AM									03:30 PM to 04:30 PM					
AM - PEAK HR VOLUME	955									450					
AM - K FACTOR (%)	74.73									32.21					
AM - D (%)															
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK															
PEAK HR TIME	02:00 PM to 03:00 PM														
PEAK HR VOLUME	320									765					
DIRECTIONAL PEAK	12:00 PM to 01:00 PM			02:00 PM to 03:00 PM						445					
PEAK HR TIME	12:00 PM to 01:00 PM			02:00 PM to 03:00 PM						445					
PEAK HR VOLUME	402			445						51.19			48.81		
PEAK HR VOLUME	402			445						51.19			48.81		
D (%)															
6-HR, 12-HR, 24-HR PERIODS															
AM 6-HR PERIOD (06:00-12:00)	3,351			AM 6-HR PERIOD (06:00-12:00)	1,769			AM 6-HR PERIOD (06:00-12:00)	5,120			6,543			
AM 12-HR PERIOD (00:00-12:00)	4,450			AM 12-HR PERIOD (00:00-12:00)	2,093			AM 12-HR PERIOD (00:00-12:00)	6,543			5,870			
PM 6-HR PERIOD (12:00-18:00)	2,185			PM 6-HR PERIOD (12:00-18:00)	3,685			PM 6-HR PERIOD (12:00-18:00)	5,870			7,969			
PM 12-HR PERIOD (12:00-24:00)	2,978			PM 12-HR PERIOD (12:00-24:00)	4,991			PM 12-HR PERIOD (12:00-24:00)	7,969			14,512			
24-HOUR PERIOD	7,428			24-HOUR PERIOD	7,094			24-HOUR PERIOD	14,512			100.00			
D (%)	51.19			D (%)	48.81			D (%)	100.00						

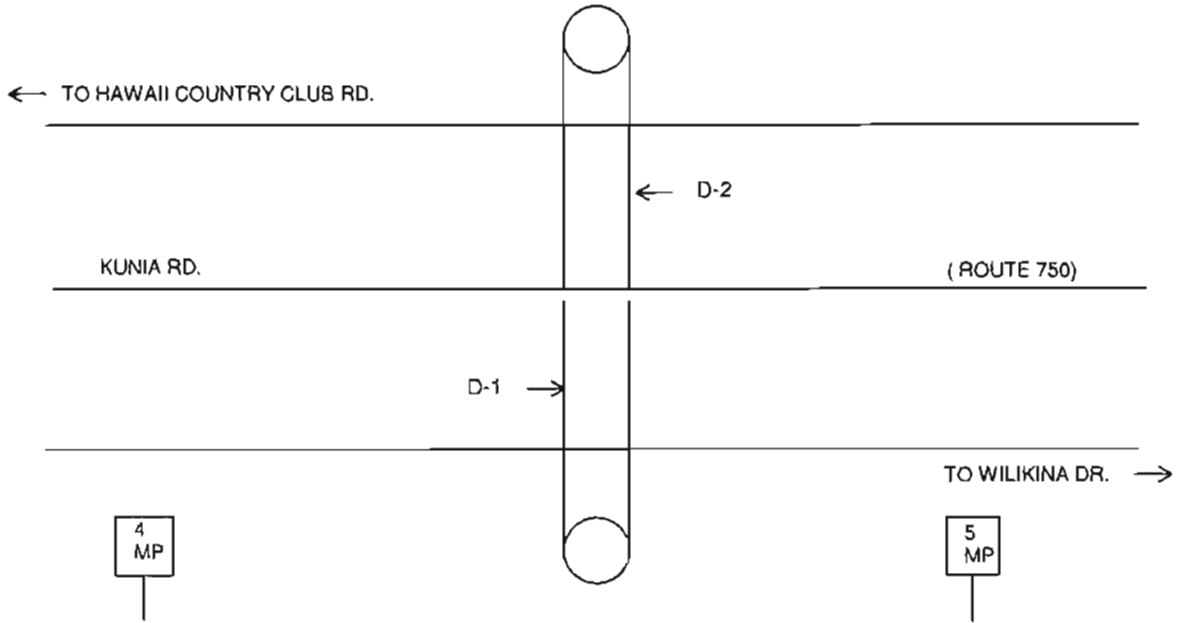
Run Date: 2011/09/08

Hawaii Department of Transportation
Highways Division
2011 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000094
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - begin 2 LANES TO URB
Town: Oahu
Count Type: CLASS
Counter Type: Tube
DIR 1: +MP
DIR 2: -MP
Final AADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	
DATE : 08/04/2011																
12:00-12:15	8	14	22	06:00-06:15	226	80	306	12:00-12:15	86	83	169	06:00-06:15	67	119	186	
12:15-12:30	7	10	17	06:15-06:30	227	85	312	12:15-12:30	98	92	190	06:15-06:30	64	98	162	
12:30-12:45	7	10	17	06:30-06:45	211	82	293	12:30-12:45	100	96	196	06:30-06:45	51	97	148	
12:45-01:00	5	10	15	06:45-07:00	271	75	346	01:00-01:15	97	65	162	06:45-07:00	56	60	116	
01:00-01:15	2	12	14	07:00-07:15	231	74	305	01:00-01:15	92	75	167	07:00-07:15	50	72	122	
01:15-01:30	5	4	9	07:15-07:30	217	58	275	01:15-01:30	78	75	153	07:15-07:30	62	60	122	
01:30-01:45	4	3	7	07:30-07:45	194	54	248	01:30-01:45	91	95	186	07:30-07:45	48	58	106	
01:45-02:00	4	2	6	07:45-08:00	158	64	222	01:45-02:00	97	100	197	07:45-08:00	46	60	106	
02:00-02:15	2	3	5	08:00-08:15	122	90	212	02:00-02:15	78	99	177	08:00-08:15	48	47	95	
02:15-02:30	1	2	3	08:15-08:30	160	63	223	02:15-02:30	71	117	188	08:15-08:30	27	49	76	
02:30-02:45	3	3	6	08:30-08:45	160	72	232	02:30-02:45	86	125	211	08:30-08:45	36	50	86	
02:45-03:00	3	4	7	08:45-09:00	104	50	154	02:45-03:00	75	159	234	08:45-09:00	29	48	77	
03:00-03:15	3	6	9	09:00-09:15	110	69	179	03:00-03:15	86	209	295	09:00-09:15	27	54	81	
03:15-03:30	4	4	8	09:15-09:30	108	75	183	03:15-03:30	96	252	348	09:15-09:30	37	39	76	
03:30-03:45	3	5	8	09:30-09:45	92	68	160	03:30-03:45	110	232	342	09:30-09:45	22	50	72	
03:45-04:00	14	5	19	09:45-10:00	101	59	160	04:00-04:15	115	260	375	09:45-10:00	18	42	60	
04:00-04:15	12	8	20	10:00-10:15	74	58	132	04:00-04:15	98	278	376	10:00-10:15	27	35	62	
04:15-04:30	28	12	40	10:15-10:30	69	68	137	04:15-04:30	100	248	348	10:15-10:30	26	25	51	
04:30-04:45	53	19	72	10:30-10:45	77	69	146	04:30-04:45	85	219	304	10:30-10:45	22	16	38	
04:45-05:00	79	25	104	10:45-11:00	84	62	146	04:45-05:00	78	233	311	10:45-11:00	15	16	31	
05:00-05:15	99	25	124	11:00-11:15	80	81	161	05:00-05:15	70	187	257	11:00-11:15	18	26	44	
05:15-05:30	181	28	209	11:15-11:30	105	91	196	05:15-05:30	76	163	239	11:15-11:30	14	13	27	
05:30-05:45	236	40	276	11:30-11:45	81	98	179	05:30-05:45	79	127	206	11:30-11:45	5	16	21	
05:45-06:00	243	48	291	11:45-12:00	80	105	185	05:45-06:00	61	131	192	11:45-12:00	11	12	23	
AM COMMUTER PERIOD (05:00-09:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2												
AM - PEAK HR TIME	06:00 AM to 07:00 AM			935	322	1257										
AM - PEAK HR VOLUME	74.38			25.62	100.00											
AM - K FACTOR (%)	74.38			25.62	100.00											
AM - D (%)	74.38			25.62	100.00											
DIRECTIONAL PEAK			AM - PEAK HR TIME	06:15 AM to 07:15 AM	06:00 AM to 07:00 AM	940	322									
DIRECTIONAL PEAK			AM - PEAK HR VOLUME	06:15 AM to 07:15 AM	06:00 AM to 07:00 AM	940	322									
DIRECTIONAL PEAK			AM - K FACTOR (%)	06:15 AM to 07:15 AM	06:00 AM to 07:00 AM	940	322									
DIRECTIONAL PEAK			AM - D (%)	06:15 AM to 07:15 AM	06:00 AM to 07:00 AM	940	322									
PM PERIOD (12:00-24:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2												
PM - PEAK HR TIME	03:30 PM to 04:30 PM			423	1018	1441										
PM - PEAK HR VOLUME	29.35			70.65	100.00											
PM - K FACTOR (%)	29.35			70.65	100.00											
PM - D (%)	29.35			70.65	100.00											
DIRECTIONAL PEAK			PM - PEAK HR TIME	03:30 PM to 04:30 PM	03:15 PM to 04:15 PM	423	1022									
DIRECTIONAL PEAK			PM - PEAK HR VOLUME	03:30 PM to 04:30 PM	03:15 PM to 04:15 PM	423	1022									
DIRECTIONAL PEAK			PM - K FACTOR (%)	03:30 PM to 04:30 PM	03:15 PM to 04:15 PM	423	1022									
DIRECTIONAL PEAK			PM - D (%)	03:30 PM to 04:30 PM	03:15 PM to 04:15 PM	423	1022									
NON-COMMUTER PERIOD (09:00-15:00)																
TWO DIRECTIONAL PEAK			DIR 1	DIR 2												
PEAK HR TIME	02:00 PM to 03:00 PM			310	500	810										
PEAK HR VOLUME	310			500	810											
PEAK HR TIME	09:00 AM to 10:00 AM			02:00 PM to 03:00 PM	411	500										
PEAK HR VOLUME	411			500	500											
6-HR, 12-HR, 24-HR PERIODS																
AM 6-HR PERIOD (06:00-12:00)			DIR 1	DIR 2	Total											
AM 12-HR PERIOD (00:00-12:00)			3,342	1,750	5,092											
PM 6-HR PERIOD (12:00-18:00)			4,348	2,052	6,400											
PM 12-HR PERIOD (12:00-24:00)			2,103	3,720	5,823											
24 HOUR PERIOD			2,929	4,882	7,811											
D (%)			7.277	6.934	14.211											
D (%)			51.21	48.79	100.00											


ISLAND: OAHU
AREA: KUNIA



Station No: B72 0750 00378

Station Location:			
Kunia Road between 4 milepost and 5 milepost			
Station Mileage:	4.86	GPS Coord (Latitude):	
		GPS Coord (Longitude):	
Begin Survey (Date/Time):		End Survey (Date/Time):	
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:		Module No.:	

HPMS DATA							
Segment Description:							
KUNIA ROAD - HAWAII COUNTRY CLUB ROAD TO BEGINNING OF 35 MPH POSTED SIGN							
Segment Begin LRS	3.78	Segment End LRS	4.88	Length	1.10		
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route	
				No.	Mile	D-2 = Direction to Beginning of Route	
KUNIA ROAD	S	6	1	750	4.86	D-1	TO WILIKINA DRIVE
						D-2	TO H-1 OVERPASS

Sketch By: C.A. Date: 3/17/2005 SLD: 2003

Run Date: 2010/1/209

Hawaii Department of Transportation
Highways Division
Highways Planning Survey Section

2010 Program Count - Summary

Site ID: B72075000378
Functional Class: RURAL:MINOR ARTERIAL
Location: KUNIA ROAD - HAWAII COUNTRY CLUB ROAD TO
Town: Oahu
Count Type: CLASS
Counter Type: Tube
DIR 1: +MP
DIR 2: -MP
Final AADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL		
DATE : 10/13/2010																	
12:00-12:15	0	10	10	06:00-06:15	177	59	236	12:00-12:15	83	74	157	06:00-06:15	80	185	265		
12:15-12:30	5	7	12	06:15-06:30	207	50	257	12:15-12:30	84	76	160	06:15-06:30	74	179	263		
12:30-12:45	3	5	8	06:30-06:45	239	49	288	12:30-12:45	90	67	157	06:30-06:45	62	132	194		
12:45-01:00	5	6	11	06:45-07:00	162	40	202	12:45-01:00	117	79	196	06:45-07:00	47	134	181		
01:00-01:15	1	4	5	07:00-07:15	171	54	225	01:00-01:15	80	81	161	07:00-07:15	36	73	109		
01:15-01:30	4	2	6	07:15-07:30	193	91	284	01:15-01:30	61	92	153	07:15-07:30	43	73	116		
01:30-01:45	0	0	0	07:30-07:45	276	74	350	01:30-01:45	70	70	141	07:30-07:45	37	67	104		
01:45-02:00	6	0	6	07:45-08:00	203	98	301	01:45-02:00	74	75	149	07:45-08:00	33	67	100		
02:00-02:15	1	6	7	08:00-08:15	141	85	226	02:00-02:15	61	115	176	08:00-08:15	24	73	97		
02:15-02:30	4	5	9	08:15-08:30	121	71	192	02:15-02:30	96	92	188	08:15-08:30	33	69	101		
02:30-02:45	5	4	9	08:30-08:45	135	55	190	02:30-02:45	61	121	182	08:30-08:45	20	44	64		
02:45-03:00	12	4	16	08:45-09:00	149	48	197	02:45-03:00	94	141	235	08:45-09:00	34	61	95		
03:00-03:15	6	5	11	09:00-09:15	121	81	202	03:00-03:15	67	149	216	09:00-09:15	25	31	56		
03:15-03:30	2	6	8	09:15-09:30	93	71	164	03:15-03:30	83	181	264	09:15-09:30	30	48	78		
03:30-03:45	9	5	14	09:30-09:45	98	60	158	03:30-03:45	74	196	270	09:30-09:45	29	59	88		
03:45-04:00	9	9	18	09:45-10:00	78	71	149	03:45-04:00	148	225	373	09:45-10:00	21	50	71		
04:00-04:15	16	18	34	10:00-10:15	56	53	109	04:00-04:15	96	241	337	10:00-10:15	18	42	60		
04:15-04:30	24	13	37	10:15-10:30	77	50	127	04:15-04:30	96	252	348	10:15-10:30	24	31	55		
04:30-04:45	54	11	65	10:30-10:45	66	49	115	04:30-04:45	102	252	354	10:30-10:45	20	25	45		
04:45-05:00	102	21	123	10:45-11:00	64	81	145	04:45-05:00	97	247	344	10:45-11:00	8	27	35		
05:00-05:15	127	28	155	11:00-11:15	59	64	123	05:00-05:15	111	230	341	11:00-11:15	7	26	33		
05:15-05:30	182	29	211	11:15-11:30	83	107	190	05:15-05:30	89	237	326	11:15-11:30	13	20	33		
05:30-05:45	320	42	362	11:30-11:45	70	107	177	05:30-05:45	94	261	355	11:30-11:45	7	9	16		
05:45-06:00	223	33	256	11:45-12:00	79	94	173	05:45-06:00	75	178	253	11:45-12:00	12	9	21		
AM COMMUTER PERIOD (05:00-09:00)																	
TWO DIRECTIONAL PEAK			DIR 1	DIR 2			PM COMMUTER PERIOD (15:00-19:00)			DIR 1	DIR 2			TOTAL			
AM - PEAK HR TIME			07:15 AM to 08:15 AM			PM - PEAK HR TIME			03:45 PM to 04:45 PM			TOTAL					
AM - PEAK HR VOLUME			813			PM - PEAK HR VOLUME			442			TOTAL			1412		
AM - K FACTOR (%)			70.03			PM - K FACTOR (%)			31.30			TOTAL			9.86		
AM - D (%)			29.97			PM - D (%)			68.70			TOTAL			100.00		
DIRECTIONAL PEAK			AM - PEAK HR TIME			PM - PEAK HR TIME			TOTAL								
AM - PEAK HR VOLUME			05:30 AM to 06:30 AM			PM - PEAK HR VOLUME			03:45 PM to 04:45 PM			TOTAL			04:00 PM to 05:00 PM		
AM - K FACTOR (%)			927			PM - K FACTOR (%)			442			TOTAL			992		
AM - D (%)			70.03			PM - D (%)			31.30			TOTAL			68.70		
AM PERIOD (00:00-12:00)																	
TWO DIRECTIONAL PEAK			DIR 1			DIR 2			TOTAL								
AM - PEAK HR TIME			07:15 AM to 08:15 AM			PM PERIOD (12:00-24:00)			TOTAL								
AM - PEAK HR VOLUME			813			TWO DIRECTIONAL PEAK			442			TOTAL			970		
AM - K FACTOR (%)			348			PM - PEAK HR TIME			03:45 PM to 04:45 PM			TOTAL			1412		
AM - D (%)			29.97			PM - K FACTOR (%)			970			TOTAL			9.86		
NON-COMMUTER PERIOD (09:00-15:00)																	
TWO DIRECTIONAL PEAK			DIR 1			DIR 2			TOTAL								
PEAK HR TIME			02:00 PM to 03:00 PM			5-HR, 12-HR, 24-HR PERIODS			TOTAL								
PEAK HR VOLUME			312			AM 6-HR PERIOD (06:00-12:00)			3,118			DIR 2			4,780		
DIRECTIONAL PEAK			09:00 AM to 10:00 AM			AM 12-HR PERIOD (00:00-12:00)			4,236			TOTAL			6,173		
PEAK HR TIME			02:00 PM to 03:00 PM			PM 6-HR PERIOD (12:00-18:00)			2,103			TOTAL			5,876		
PEAK HR VOLUME			469			PM 12-HR PERIOD (12:00-24:00)			2,840			TOTAL			8,146		
D (%)			29.97			24 HOUR PERIOD			7,078			TOTAL			14,319		
TOTAL			390			TOTAL			49,43			TOTAL			100,00		

Run Date: 2010/12/09

Hawaii Department of Transportation
Highways Division

2010 Program Count - Summary

Site ID: B72075000378
Functional Class: RURAL MINOR ARTERIAL
Location: KUNIA ROAD - HAWAII COUNTRY CLUB ROAD TO

Town: Oahu
Count Type: CLASS
DIR 1: +MP
DIR 2: -MP
Counter Type: Tube
Final ADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 10/14/2010															
12:00-12:15	12	5	17	06:00-06:15	264	59	323	12:00-12:15	90	78	168	06:00-06:15	53	129	182
12:15-12:30	8	7	15	06:15-06:30	238	85	323	12:15-12:30	88	104	192	06:15-06:30	62	134	196
12:30-12:45	10	12	22	06:30-06:45	244	56	300	12:30-12:45	94	89	183	06:30-06:45	60	103	163
12:45-01:00	4	10	14	06:45-07:00	260	44	304	12:45-01:00	91	76	167	06:45-07:00	57	106	163
01:00-01:15	3	8	11	07:00-07:15	230	61	291	01:00-01:15	77	94	171	07:00-07:15	47	96	143
01:15-01:30	2	1	3	07:15-07:30	223	66	289	01:15-01:30	77	66	143	07:15-07:30	42	63	105
01:30-01:45	7	7	14	07:30-07:45	189	81	270	01:30-01:45	103	108	211	07:30-07:45	38	51	89
01:45-02:00	2	3	5	07:45-08:00	185	93	278	01:45-02:00	63	84	147	07:45-08:00	39	56	95
02:00-02:15	2	6	8	08:00-08:15	118	90	208	02:00-02:15	67	96	163	08:00-08:15	32	59	91
02:15-02:30	2	5	7	08:15-08:30	138	88	226	02:15-02:30	66	124	190	08:15-08:30	31	65	96
02:30-02:45	3	1	4	08:30-08:45	169	77	246	02:30-02:45	77	141	218	08:30-08:45	33	55	88
02:45-03:00	8	5	13	08:45-09:00	141	57	198	02:45-03:00	83	169	252	08:45-09:00	36	47	83
03:00-03:15	15	7	22	09:00-09:15	115	71	186	03:00-03:15	72	213	285	09:00-09:15	26	40	66
03:15-03:30	7	6	13	09:15-09:30	131	60	191	03:15-03:30	84	280	364	09:15-09:30	23	43	66
03:30-03:45	8	6	14	09:30-09:45	108	83	191	03:30-03:45	99	263	362	09:30-09:45	24	55	79
03:45-04:00	10	8	18	09:45-10:00	78	70	148	03:45-04:00	108	270	378	09:45-10:00	18	26	44
04:00-04:15	19	8	27	10:00-10:15	56	64	120	04:00-04:15	97	255	352	10:00-10:15	19	39	58
04:15-04:30	33	13	46	10:15-10:30	84	71	155	04:15-04:30	86	279	365	10:15-10:30	15	26	41
04:30-04:45	69	19	88	10:30-10:45	80	80	160	04:30-04:45	96	289	385	10:30-10:45	17	26	43
04:45-05:00	95	23	118	10:45-11:00	72	96	168	04:45-05:00	70	290	320	10:45-11:00	14	19	33
05:00-05:15	152	23	175	11:00-11:15	68	70	138	05:00-05:15	79	216	295	11:00-11:15	12	26	38
05:15-05:30	196	28	224	11:15-11:30	94	104	198	05:15-05:30	72	180	252	11:15-11:30	14	14	28
05:30-05:45	316	45	361	11:30-11:45	75	95	170	05:30-05:45	75	161	236	11:30-11:45	8	14	22
05:45-06:00	305	42	347	11:45-12:00	80	91	171	05:45-06:00	97	129	226	11:45-12:00	14	9	23
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL
AM - PEAK HR TIME	AM - PEAK HR VOLUME	AM - K FACTOR (%)	11:23	05:30 AM to 06:30 AM	231	1354	9.09	03:45 PM to 04:45 PM	1093	1480	9.93	03:45 PM to 04:45 PM	1093	1480	9.93
AM - D (%)			82.94		17.06	100.00			26.15	73.85	100.00			73.85	100.00
DIRECTIONAL PEAK															
AM - PEAK HR TIME	AM - PEAK HR VOLUME	AM - K FACTOR (%)	05:30 AM to 06:30 AM	07:30 AM to 08:30 AM	03:30 PM to 04:30 PM	03:45 PM to 04:45 PM	03:30 PM to 04:30 PM	03:45 PM to 04:45 PM							
AM - PEAK HR VOLUME	AM - K FACTOR (%)	AM - D (%)	1123	352	387	387	387	387							
AM - D (%)			82.94	17.06	26.15	26.15	26.15	26.15							
PM PERIOD (12:00-24:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL
PM - PEAK HR TIME	PM - PEAK HR VOLUME	PM - K FACTOR (%)	03:30 PM to 04:30 PM	03:45 PM to 04:45 PM	03:30 PM to 04:30 PM	03:45 PM to 04:45 PM	03:30 PM to 04:30 PM	03:45 PM to 04:45 PM							
PM - PEAK HR VOLUME	PM - K FACTOR (%)	PM - D (%)	1093	1480	1093	1480	1093	1480							
PM - D (%)			73.85	9.93	73.85	9.93	73.85	9.93							
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	02:00 PM to 03:00 PM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	293	530	823	293	530	823	293	530	823	293	530	823	293
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	492	530	823	492	530	823	492	530	823	492	530	823	492
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	492	530	823	492	530	823	492	530	823	492	530	823	492
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM	02:00 PM to 03:00 PM	09:00 AM to 10:00 AM
PEAK HR TIME	PEAK HR VOLUME	DIRECTIONAL PEAK	492	530	823	492	530	823	492	530	823	492	530	823	492

Run Date: 2010/1/2/09

Hawaii Department of Transportation
Highways Division


2010 Program Count - Summary

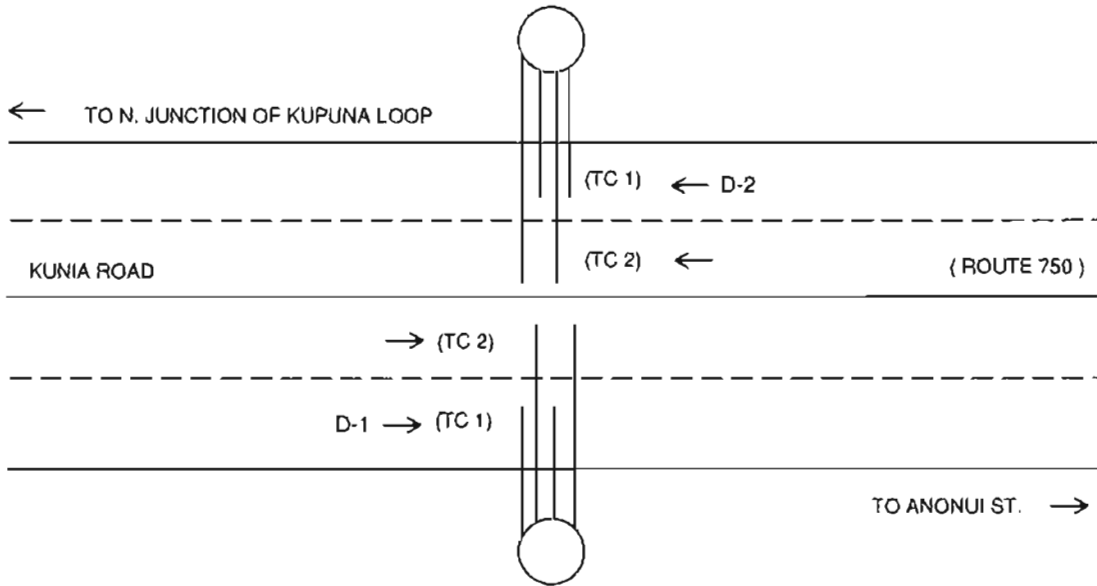
Highways Planning Survey Section

Site ID: B72075000088
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - begin 3 LANES TO BEG

Town: Oahu
Count Type: CLASS
Counter Type: Tube
DIR 1: +MP
DIR 2: -MP
Final AADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	
DATE : 10/13/2010																
12:00-12:15	19	8	27	06:00-06:15	229	144	373	12:00-12:15	112	130	242	06:00-06:15	131	195	326	
12:15-12:30	19	11	30	06:15-06:30	254	165	419	12:15-12:30	107	96	203	06:15-06:30	145	215	360	
12:30-12:45	14	8	22	06:30-06:45	248	184	432	12:30-12:45	137	99	236	06:30-06:45	140	179	319	
12:45-01:00	10	10	20	06:45-07:00	227	130	357	12:45-01:00	108	100	208	06:45-07:00	141	154	295	
01:00-01:15	7	7	14	07:00-07:15	209	159	368	01:00-01:15	119	132	245	07:00-07:15	124	126	250	
01:15-01:30	6	2	8	07:15-07:30	215	168	383	01:15-01:30	115	133	248	07:15-07:30	134	98	232	
01:30-01:45	9	0	9	07:30-07:45	195	119	314	01:30-01:45	111	156	267	07:30-07:45	106	93	199	
01:45-02:00	7	2	9	07:45-08:00	172	125	297	01:45-02:00	94	105	199	07:45-08:00	80	90	170	
02:00-02:15	3	4	7	08:00-08:15	150	133	283	02:00-02:15	106	145	251	08:00-08:15	86	82	168	
02:15-02:30	7	9	16	08:15-08:30	146	122	268	02:15-02:30	127	150	277	08:15-08:30	65	83	148	
02:30-02:45	7	6	13	08:30-08:45	157	120	277	02:30-02:45	117	141	258	08:30-08:45	80	66	146	
02:45-03:00	13	7	20	08:45-09:00	161	97	258	02:45-03:00	131	163	294	08:45-09:00	78	67	145	
03:00-03:15	2	8	10	09:00-09:15	112	119	231	03:00-03:15	124	200	324	09:00-09:15	64	48	112	
03:15-03:30	9	13	22	09:15-09:30	106	124	230	03:15-03:30	167	190	357	09:15-09:30	56	42	98	
03:30-03:45	8	16	24	09:30-09:45	88	103	191	03:30-03:45	155	283	438	09:30-09:45	48	82	130	
03:45-04:00	10	12	22	09:45-10:00	95	88	183	03:45-04:00	176	258	434	09:45-10:00	46	45	91	
04:00-04:15	16	27	43	10:00-10:15	122	102	224	04:00-04:15	161	249	410	10:00-10:15	47	57	104	
04:15-04:30	33	38	71	10:15-10:30	108	88	196	04:15-04:30	167	265	432	10:15-10:30	48	33	81	
04:30-04:45	77	49	126	10:30-10:45	91	81	172	04:30-04:45	177	292	469	10:30-10:45	29	40	69	
04:45-05:00	75	61	136	10:45-11:00	105	111	216	04:45-05:00	162	266	428	10:45-11:00	41	36	77	
05:00-05:15	134	86	220	11:00-11:15	92	84	176	05:00-05:15	154	297	451	11:00-11:15	28	39	67	
05:15-05:30	201	128	329	11:15-11:30	116	123	239	05:15-05:30	157	241	398	11:15-11:30	28	22	50	
05:30-05:45	272	111	383	11:30-11:45	113	144	257	05:30-05:45	168	277	445	11:30-11:45	15	17	33	
05:45-06:00	245	118	363	11:45-12:00	130	107	237	05:45-06:00	145	253	398	11:45-12:00	13	8	21	
AM COMMUTER PERIOD (05:00-09:00)																
TWO DIRECTIONAL PEAK																
AM - PEAK HR TIME				DIR 1				DIR 2				DIR 1				DIR 2
AM - PEAK HR VOLUME				976				611				1587				1780
AM - K FACTOR (%)				61.50				38.50				7.88				8.84
AM - D (%)				61.50				38.50				100.00				100.00
DIRECTIONAL PEAK																
AM - PEAK HR TIME				05:30 AM to 06:30 AM				06:30 AM to 07:30 AM				03:45 PM to 04:45 PM				04:15 PM to 05:15 PM
AM - PEAK HR VOLUME				1000				641				881				1120
AM - K FACTOR (%)				976				611				660				1120
AM - D (%)				61.50				38.50				37.08				62.92
PM PERIOD (12:30-24:00)																
TWO DIRECTIONAL PEAK																
PM - PEAK HR TIME				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM				04:15 PM to 05:15 PM				04:15 PM to 05:15 PM
PM - PEAK HR VOLUME				481				599				1080				1780
PM - K FACTOR (%)				481				599				1080				1780
PM - D (%)				481				599				1080				1780
NON-COMMUTER PERIOD (09:00-15:00)																
TWO DIRECTIONAL PEAK																
PEAK HR TIME				11:45 AM to 12:45 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM
PEAK HR VOLUME				486				599				1080				1780
PEAK HR TIME				11:45 AM to 12:45 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM
PEAK HR VOLUME				486				599				1080				1780
PEAK HR TIME				11:45 AM to 12:45 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM
PEAK HR VOLUME				486				599				1080				1780


ISLAND: OAHU
AREA: KUNIA



Station No:	872 0750 00088
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Station Location:			
Kunia Road between North Kupuna Loop and Anonui Street			
Station Mileage:	0.88	GPS Coord (Latitude):	
		GPS Coord (Longitude):	
Begin Survey (Date/Time):		End Survey (Date/Time):	
Survey Method:	LOOP HOSE OTHER	Survey Type:	VOL CLASS SPEED OTHER
Survey Crew:		Module No.:	

HPMS DATA						
Segment Description:						
KUNIA ROAD - BEGINNING OF 3 LANES TO BEGINNING OF 2 LANES						
Segment Begin LRS	0.88	Segment End LRS	0.94	Length	0.06	
Facility Name	Juris	Func Class	Area Type	Route		D-1 = Direction to End of Route
				No.	Mile	D-2 = Direction to Beginning of Route
KUNIA ROAD	S	14	4	750	0.88	D-1 TO WILIKINA DRIVE
						D-2 TO H-1 OVERPASS

Sketch By:	HK	Date:	3/15/2005	SLD:	2003
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Run Date: 2010/1/2/09

Hawaii Department of Transportation
Highways Division
2010 Program Count - Summary
Highways Planning Survey Section

Site ID: B72075000086
Functional Class: URBAN/PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - begin 3 LANES TO BEG

Town: Oahu
Count Type: CLASS
Counter Type: Tube

DIR 1: +MP
DIR 2: -MP
Final AADT: 0
Route No: 750

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL		
DATE : 10/14/2010																	
12:00-12:15	196	15	211	06:00-06:15	11	148	159	12:00-12:15	140	91	231	06:00-06:15	112	172	284		
12:15-12:30	168	3	171	06:15-06:30	8	140	148	12:15-12:30	180	128	308	06:15-06:30	112	171	283		
12:30-12:45	138	12	150	06:30-06:45	10	180	190	12:30-12:45	139	149	288	06:30-06:45	108	162	270		
12:45-01:00	125	12	138	06:45-07:00	7	139	146	12:45-01:00	158	124	282	06:45-07:00	118	135	253		
01:00-01:15	121	6	127	07:00-07:15	2	158	160	01:00-01:15	130	117	247	07:00-07:15	115	129	244		
01:15-01:30	76	6	82	07:15-07:30	0	130	130	01:15-01:30	122	110	232	07:15-07:30	129	96	225		
01:30-01:45	69	6	75	07:30-07:45	2	122	124	01:30-01:45	126	125	251	07:30-07:45	122	86	208		
01:45-02:00	98	5	103	07:45-08:00	4	126	130	01:45-02:00	130	144	274	07:45-08:00	131	66	197		
02:00-02:15	75	9	84	08:00-08:15	9	130	139	02:00-02:15	120	160	280	08:00-08:15	151	75	226		
02:15-02:30	63	5	68	08:15-08:30	6	120	126	02:15-02:30	136	163	299	08:15-08:30	142	68	210		
02:30-02:45	53	4	57	08:30-08:45	7	136	143	02:30-02:45	111	173	284	08:30-08:45	175	78	253		
02:45-03:00	64	8	72	08:45-09:00	8	111	119	02:45-03:00	94	185	279	08:45-09:00	182	49	231		
03:00-03:15	39	8	47	09:00-09:15	13	94	107	03:00-03:15	111	254	365	09:00-09:15	182	49	231		
03:15-03:30	54	13	67	09:15-09:30	16	111	127	03:15-03:30	141	260	401	09:15-09:30	270	55	248		
03:30-03:45	42	17	59	09:30-09:45	12	141	153	03:30-03:45	106	331	437	09:30-09:45	238	63	301		
03:45-04:00	37	8	45	09:45-10:00	27	106	133	03:45-04:00	111	324	435	09:45-10:00	254	50	304		
04:00-04:15	41	30	71	10:00-10:15	79	108	187	04:00-04:15	95	313	408	10:00-10:15	259	33	312		
04:15-04:30	26	33	59	10:15-10:30	92	103	195	04:15-04:30	105	290	395	10:15-10:30	243	33	276		
04:30-04:45	18	46	64	10:30-10:45	94	105	199	04:30-04:45	103	278	381	10:30-10:45	263	34	297		
04:45-05:00	32	67	99	10:45-11:00	83	126	209	04:45-05:00	128	317	443	10:45-11:00	262	32	294		
05:00-05:15	16	83	99	11:00-11:15	114	115	229	05:00-05:15	102	243	345	11:00-11:15	278	19	297		
05:15-05:30	17	114	131	11:15-11:30	124	126	250	05:15-05:30	111	227	338	11:15-11:30	266	28	294		
05:30-05:45	16	124	140	11:30-11:45	117	132	249	05:30-05:45	115	213	328	11:30-11:45	242	16	258		
05:45-06:00	8	117	125	11:45-12:00	148	130	278	05:45-06:00	114	192	306	11:45-12:00	205	8	213		
AM COMMUTER PERIOD (05:00-09:00)																	
TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TWO DIRECTIONAL PEAK			DIR 1	DIR 2			TWO DIRECTIONAL PEAK			
AM - PEAK HR TIME	06:15 AM to 07:15 AM			AM - PEAK HR TIME	06:15 AM to 07:15 AM			AM - PEAK HR TIME	03:15 PM to 04:15 PM			AM - PEAK HR TIME	03:15 PM to 04:15 PM				
AM - PEAK HR VOLUME	27			AM - PEAK HR VOLUME	617			AM - PEAK HR VOLUME	644			AM - PEAK HR VOLUME	1228				
AM - K FACTOR (%)	4.19			AM - K FACTOR (%)	95.81			AM - K FACTOR (%)	3.14			AM - K FACTOR (%)	8.20				
AM - D (%)	57			AM - D (%)	100.00			AM - D (%)	26.95			AM - D (%)	73.05				
DIRECTIONAL PEAK																	
AM - PEAK HR TIME	05:00 AM to 06:00 AM			AM - PEAK HR TIME	06:15 AM to 07:15 AM			AM - PEAK HR TIME	03:00 PM to 04:00 PM			AM - PEAK HR TIME	03:30 PM to 04:30 PM				
AM - PEAK HR VOLUME	57			AM - PEAK HR VOLUME	617			AM - PEAK HR VOLUME	469			AM - PEAK HR VOLUME	1258				
PM PERIOD (12:00-24:00)																	
TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK		
AM - PEAK HR TIME	11:30 AM to 12:00 PM			AM - PEAK HR TIME	11:30 AM to 12:00 PM			AM - PEAK HR TIME	PM - PEAK HR TIME			AM - PEAK HR TIME	03:15 PM to 04:15 PM				
AM - PEAK HR VOLUME	503			AM - PEAK HR VOLUME	503			AM - PEAK HR VOLUME	1006			AM - PEAK HR VOLUME	1228				
AM - K FACTOR (%)	50.00			AM - K FACTOR (%)	50.00			AM - K FACTOR (%)	4.91			AM - K FACTOR (%)	8.20				
AM - D (%)	50.00			AM - D (%)	50.00			AM - D (%)	100.00			AM - D (%)	73.05				
NON-COMMUTER PERIOD (09:00-15:00)																	
TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK		
PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	6-HR, 12-HR, 24-HR PERIODS			PEAK HR TIME	6-HR, 12-HR, 24-HR PERIODS				
PEAK HR VOLUME	461			PEAK HR VOLUME	681			PEAK HR VOLUME	AM 6-HR PERIOD (06:00-12:00)			PEAK HR VOLUME	993				
DIRECTIONAL PEAK	12:00 PM to 01:00 PM			DIRECTIONAL PEAK	02:00 PM to 03:00 PM			DIRECTIONAL PEAK	AM 12-HR PERIOD (00:00-12:00)			DIRECTIONAL PEAK	2,586				
PEAK HR VOLUME	617			PEAK HR VOLUME	681			PEAK HR VOLUME	PM 6-HR PERIOD (12:00-18:00)			PEAK HR VOLUME	2,926				
PEAK HR TIME	12:00 PM to 01:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	PM 12-HR PERIOD (12:00-24:00)			PEAK HR TIME	7,496				
PEAK HR VOLUME	681			PEAK HR VOLUME	681			PEAK HR VOLUME	24 HOUR PERIOD			PEAK HR VOLUME	10,082				
PEAK HR TIME	12:00 PM to 01:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	D (%)			PEAK HR TIME	10,424				
PEAK HR VOLUME	681			PEAK HR VOLUME	681			PEAK HR VOLUME	D (%)			PEAK HR VOLUME	20,506				
PEAK HR TIME	12:00 PM to 01:00 PM			PEAK HR TIME	02:00 PM to 03:00 PM			PEAK HR TIME	D (%)			PEAK HR TIME	50.83				
PEAK HR VOLUME	681			PEAK HR VOLUME	681			PEAK HR VOLUME	D (%)			PEAK HR VOLUME	100.00				

Run Date: 2010/07/08

Hawaii Department of Transportation
Highways Division

Highways Planning Survey Section

2009 Program Count - Summary

Site ID: B72075000088
Functional Class: URBAN:PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - BEGINNING OF 3 LANES TO BEG

Town: Oahu
Count Type: CLASS
Counter Type: Tube

Final AADT: 18500
Route No: 750
DIR 1: +MP DIR 2: -MP

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	
DATE : 09/22/2009																
12:00-12:15	22	20	42	06:00-06:15	185	140	325	12:00-12:15	93	98	191	06:00-06:15	137	162	299	
12:15-12:30	16	13	29	06:15-06:30	237	189	426	12:15-12:30	134	90	224	06:15-06:30	135	175	310	
12:30-12:45	15	11	26	06:30-06:45	229	164	393	12:30-12:45	122	99	221	06:30-06:45	118	135	253	
12:45-01:00	14	6	20	06:45-07:00	228	170	398	12:45-01:00	109	96	205	06:45-07:00	110	107	217	
01:00-01:15	10	16	26	07:00-07:15	216	172	388	01:00-01:15	124	123	247	07:00-07:15	124	109	233	
01:15-01:30	13	8	21	07:15-07:30	215	151	366	01:15-01:30	89	124	213	07:15-07:30	123	99	216	
01:30-01:45	16	9	25	07:30-07:45	174	149	323	01:30-01:45	87	122	209	07:30-07:45	87	85	170	
01:45-02:00	6	6	12	07:45-08:00	147	136	282	01:45-02:00	85	141	226	07:45-08:00	86	60	146	
02:00-02:15	6	3	9	08:00-08:15	143	136	279	02:00-02:15	109	128	237	08:00-08:15	61	69	124	
02:15-02:30	7	2	9	08:15-08:30	137	114	251	02:15-02:30	112	135	247	08:15-08:30	90	86	176	
02:30-02:45	8	7	13	08:30-08:45	135	125	260	02:30-02:45	142	145	287	08:30-08:45	65	55	120	
02:45-03:00	9	5	14	08:45-09:00	114	118	232	02:45-03:00	125	157	282	08:45-09:00	59	53	112	
03:00-03:15	8	6	14	09:00-09:15	109	107	216	03:00-03:15	171	192	363	09:00-09:15	58	57	115	
03:15-03:30	16	14	30	09:15-09:30	107	108	215	03:15-03:30	152	191	343	09:15-09:30	60	53	113	
03:30-03:45	5	14	19	09:30-09:45	78	110	188	03:30-03:45	169	253	422	09:30-09:45	47	52	99	
03:45-04:00	12	16	28	09:45-10:00	115	107	222	03:45-04:00	179	238	417	09:45-10:00	54	42	96	
04:00-04:15	36	21	57	10:00-10:15	98	90	188	04:00-04:15	170	199	369	10:00-10:15	51	56	109	
04:15-04:30	42	37	79	10:15-10:30	105	110	215	04:15-04:30	180	240	420	10:15-10:30	42	33	75	
04:30-04:45	55	37	92	10:30-10:45	88	92	180	04:30-04:45	156	208	364	10:30-10:45	33	23	56	
04:45-05:00	81	59	140	10:45-11:00	102	105	207	04:45-05:00	166	256	422	10:45-11:00	36	34	70	
05:00-05:15	99	60	159	11:00-11:15	82	106	188	05:00-05:15	162	221	383	11:00-11:15	25	20	45	
05:15-05:30	175	98	273	11:15-11:30	115	123	238	05:15-05:30	156	242	398	11:15-11:30	33	22	55	
05:30-05:45	224	121	345	11:30-11:45	94	116	210	05:30-05:45	157	209	366	11:30-11:45	24	21	45	
05:45-06:00	238	130	368	11:45-12:00	95	100	195	05:45-06:00	126	225	351	11:45-12:00	18	11	29	
AM COMMUTER PERIOD (05:00-09:00)																
TWO DIRECTIONAL PEAK																
AM - PEAK HR TIME				06:15 AM to 07:15 AM				06:15 AM to 07:15 AM				03:30 PM to 04:30 PM				
AM - PEAK HR VOLUME				910				695				930				
AM - K FACTOR (%)				56.70				43.30				57.13				
AM - D (%)								100.00								
DIRECTIONAL PEAK																
AM - PEAK HR TIME				06:15 AM to 07:15 AM				06:15 AM to 07:15 AM				03:30 PM to 04:30 PM				
AM - PEAK HR VOLUME				910				695				930				
AM - K FACTOR (%)								8.48								
AM - D (%)								100.00								
PM COMMUTER PERIOD (15:00-19:00)																
TWO DIRECTIONAL PEAK																
PM - PEAK HR TIME				03:30 PM to 04:30 PM				03:30 PM to 04:30 PM				03:30 PM to 04:30 PM				
PM - PEAK HR VOLUME				698				698				930				
PM - K FACTOR (%)								42.87								
PM - D (%)								57.13								
DIRECTIONAL PEAK																
PM - PEAK HR TIME				03:30 PM to 04:30 PM				03:30 PM to 04:30 PM				03:30 PM to 04:30 PM				
PM - PEAK HR VOLUME				698				698				930				
PM - K FACTOR (%)								8.60								
PM - D (%)								100.00								
AM PERIOD (00:00-12:00)																
TWO DIRECTIONAL PEAK																
AM - PEAK HR TIME				06:15 AM to 07:15 AM				06:15 AM to 07:15 AM				03:30 PM to 04:30 PM				
AM - PEAK HR VOLUME				910				695				930				
AM - K FACTOR (%)								8.48								
AM - D (%)								100.00								
NON-COMMUTER PERIOD (09:00-15:00)																
TWO DIRECTIONAL PEAK																
PEAK HR TIME				02:00 PM to 03:00 PM				02:00 PM to 03:00 PM								
PEAK HR VOLUME				488				565				1053				
DIRECTIONAL PEAK																
PEAK HR TIME				12:15 PM to 01:15 PM				02:00 PM to 03:00 PM								
PEAK HR VOLUME				489				565								
D (%)																

Run Date: 2010/07/08

Hawaii Department of Transportation
Highways Division

2009 Program Count - Summary

Highways Planning Survey Section

Site ID: B72075000088
Functional Class: URBAN;PRINCIPAL ARTERIAL - OTHER
Location: KUNIA ROAD - BEGINNING OF 3 LANES TO BEG

Town: Oahu
Count Type: CLASS
Counter Type: Tube

Final AADT: 18500
Route No: 750
DIR 1: +MP DIR 2: -MP

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	
DATE : 09/29/2009																
12:00-12:15	14	13	27	06:00-06:15	228	141	369	12:00-12:15	97	120	217	06:00-06:15	130	177	307	
12:15-12:30	15	17	32	06:15-06:30	223	175	398	12:15-12:30	138	123	261	06:15-06:30	171	194	365	
12:30-12:45	19	8	27	06:30-06:45	213	195	408	12:30-12:45	111	125	236	06:30-06:45	116	115	231	
12:45-01:00	7	12	19	06:45-07:00	230	181	411	12:45-01:00	111	119	230	06:45-07:00	110	123	233	
01:00-01:15	9	8	17	07:00-07:15	202	183	385	01:00-01:15	119	119	238	07:00-07:15	122	114	236	
01:15-01:30	14	4	18	07:15-07:30	234	155	389	01:15-01:30	95	120	215	07:15-07:30	81	111	192	
01:30-01:45	13	7	20	07:30-07:45	195	138	333	01:30-01:45	105	104	209	07:30-07:45	96	82	178	
01:45-02:00	11	3	14	07:45-08:00	160	140	300	01:45-02:00	105	124	229	07:45-08:00	101	83	184	
02:00-02:15	3	7	10	08:00-08:15	166	137	303	02:00-02:15	111	118	229	08:00-08:15	82	76	158	
02:15-02:30	8	4	12	08:15-08:30	154	141	295	02:15-02:30	111	133	244	08:15-08:30	79	72	151	
02:30-02:45	7	3	10	08:30-08:45	134	120	254	02:30-02:45	119	138	257	08:30-08:45	71	69	140	
02:45-03:00	11	7	18	08:45-09:00	128	110	238	02:45-03:00	127	164	291	08:45-09:00	74	65	139	
03:00-03:15	5	8	13	09:00-09:15	112	108	220	03:00-03:15	124	166	290	09:00-09:15	77	62	139	
03:15-03:30	11	13	24	09:15-09:30	112	87	199	03:15-03:30	192	207	399	09:15-09:30	89	51	120	
03:30-03:45	11	19	30	09:30-09:45	86	88	174	03:30-03:45	172	256	428	09:30-09:45	57	44	101	
03:45-04:00	13	17	30	09:45-10:00	81	97	178	03:45-04:00	172	238	410	09:45-10:00	45	42	87	
04:00-04:15	24	23	47	10:00-10:15	79	89	168	04:00-04:15	161	193	354	10:00-10:15	40	51	91	
04:15-04:30	41	40	81	10:15-10:30	113	92	205	04:15-04:30	159	248	407	10:15-10:30	49	33	82	
04:30-04:45	58	30	88	10:30-10:45	102	111	213	04:30-04:45	148	257	405	10:30-10:45	34	30	64	
04:45-05:00	66	53	119	10:45-11:00	101	100	201	04:45-05:00	140	243	383	10:45-11:00	38	28	66	
05:00-05:15	119	65	184	11:00-11:15	94	108	202	05:00-05:15	156	211	367	11:00-11:15	31	25	56	
05:15-05:30	184	108	272	11:15-11:30	94	108	202	05:15-05:30	175	231	406	11:15-11:30	33	26	59	
05:30-05:45	206	107	313	11:30-11:45	109	100	209	05:30-05:45	151	224	375	11:30-11:45	27	22	49	
05:45-06:00	226	111	337	11:45-12:00	95	99	194	05:45-06:00	154	231	385	11:45-12:00	17	17	34	
AM COMMUTER PERIOD (05:00-09:00)																
TWO DIRECTIONAL PEAK																
AM - PEAK HR TIME				DIR 1				DIR 2				DIR 1				DIR 2
AM - PEAK HR VOLUME				868				734				1602				1599
AM - K FACTOR (%)				54.18				45.82				100.00				8.36
AM - D (%)				54.18				45.82				100.00				100.00
DIRECTIONAL PEAK																
AM - PEAK HR TIME				06:00 AM to 07:00 AM				06:15 AM to 07:15 AM				03:15 PM to 04:15 PM				04:15 PM to 05:15 PM
AM - PEAK HR VOLUME				894				734				664				959
AM - K FACTOR (%)				54.18				45.82				100.00				8.36
AM - D (%)				54.18				45.82				100.00				100.00
AM PERIOD (00:00-12:00)																
TWO DIRECTIONAL PEAK																
AM - PEAK HR TIME				06:15 AM to 07:15 AM				734				1602				1599
AM - PEAK HR VOLUME				868				734				1602				1599
AM - K FACTOR (%)				54.18				45.82				100.00				8.36
AM - D (%)				54.18				45.82				100.00				100.00
NON-COMMUTER PERIOD (09:00-15:00)																
TWO DIRECTIONAL PEAK																
PEAK HR TIME				02:00 PM to 03:00 PM				553				1021				553
PEAK HR VOLUME				468				553				1021				553
DIRECTIONAL PEAK				12:15 PM to 01:15 PM				02:00 PM to 03:00 PM				479				553
PEAK HR TIME				12:15 PM to 01:15 PM				02:00 PM to 03:00 PM				479				553
PEAK HR VOLUME				479				553				1021				553
D (%)				47.9				55.3				102.1				55.3
6-HR, 12-HR, 24-HR PERIODS																
DIR 1	DIR 2	Total														
3,427	3,003	6,430														
4,502	3,690	8,192														
3,254	4,212	7,466														
5,004	5,924	10,928														
9,506	9,614	19,120														
49,72	50,28	100,00														

Run Date: 2010/07/09

Hawaii Department of Transportation
Highways Division

2009 Program Count - Summary

Site ID: B72075000200
Functional Class: RURAL MINOR ARTERIAL
Location: KUNIA ROAD, 2.8 MILE N.W. OF H-1 FRWY /

Town: Oahu
Count Type: CLASS
Counter Type: Tube

Final AADT: 14500
Route No: 750
DIR 1: +MP DIR 2: -MP

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
DATE : 10/13/2009															
12:00-12:15	11	6	17	06:00-06:15	240	59	299	12:00-12:15	67	111	178	06:00-06:15	65	154	219
12:15-12:30	3	8	11	06:15-06:30	230	100	330	12:15-12:30	80	97	177	06:15-06:30	83	152	235
12:30-12:45	8	16	24	06:30-06:45	248	108	356	12:30-12:45	107	88	195	06:30-06:45	62	125	187
12:45-01:00	8	4	12	06:45-07:00	235	88	323	12:45-01:00	106	91	197	06:45-07:00	40	100	140
01:00-01:15	11	5	16	07:00-07:15	281	100	381	01:00-01:15	76	79	155	07:00-07:15	58	102	160
01:15-01:30	9	7	16	07:15-07:30	248	86	334	01:15-01:30	89	88	177	07:15-07:30	57	84	141
01:30-01:45	6	13	19	07:30-07:45	216	85	301	01:30-01:45	72	111	183	07:30-07:45	55	55	110
01:45-02:00	2	3	5	07:45-08:00	145	86	231	01:45-02:00	88	104	192	07:45-08:00	40	54	94
02:00-02:15	0	8	8	08:00-08:15	136	92	228	02:00-02:15	84	108	192	08:00-08:15	50	67	97
02:15-02:30	3	3	6	08:15-08:30	132	79	211	02:15-02:30	81	106	187	08:15-08:30	25	58	83
02:30-02:45	4	6	10	08:30-08:45	131	71	202	02:30-02:45	94	106	200	08:30-08:45	25	55	80
02:45-03:00	9	5	14	08:45-09:00	116	71	187	02:45-03:00	82	137	219	08:45-09:00	18	45	63
03:00-03:15	2	5	7	09:00-09:15	93	76	169	03:00-03:15	93	138	231	09:00-09:15	24	41	65
03:15-03:30	5	5	10	09:15-09:30	113	86	199	03:15-03:30	83	156	249	09:15-09:30	32	37	69
03:30-03:45	2	4	6	09:30-09:45	82	75	157	03:30-03:45	135	189	324	09:30-09:45	33	38	71
03:45-04:00	11	7	18	09:45-10:00	88	74	162	03:45-04:00	136	200	336	09:45-10:00	30	31	61
04:00-04:15	16	4	20	10:00-10:15	67	92	159	04:00-04:15	94	189	283	10:00-10:15	21	32	53
04:15-04:30	36	14	50	10:15-10:30	78	81	159	04:15-04:30	100	252	352	10:15-10:30	24	27	51
04:30-04:45	56	19	75	10:30-10:45	87	82	169	04:30-04:45	97	249	346	10:30-10:45	18	14	32
04:45-05:00	91	24	115	10:45-11:00	80	78	158	04:45-05:00	103	213	316	10:45-11:00	12	27	39
05:00-05:15	88	33	121	11:00-11:15	79	96	175	05:00-05:15	98	181	289	11:00-11:15	23	24	47
05:15-05:30	186	39	225	11:15-11:30	99	85	184	05:15-05:30	104	220	324	11:15-11:30	17	14	31
05:30-05:45	300	39	339	11:30-11:45	75	100	175	05:30-05:45	68	208	276	11:30-11:45	17	9	26
05:45-06:00	271	54	325	11:45-12:00	101	125	226	05:45-06:00	93	178	271	11:45-12:00	8	17	25
AM COMMUTER PERIOD (05:00-09:00)															
TWO DIRECTIONAL PEAK			DIR 1	DIR 2	TOTAL			PM COMMUTER PERIOD (15:00-19:00)			DIR 1	DIR 2	TOTAL		
AM - PEAK HR TIME	06:30 AM to 07:30 AM			AM - PEAK HR TIME	03:45 PM to 04:45 PM										
AM - PEAK HR VOLUME	1012	382	1394	AM - PEAK HR VOLUME	427	890	1317								
AM - K FACTOR (%)	9.32			AM - K FACTOR (%)	8.81										
AM - D (%)	72.80	27.40	100.00	AM - D (%)	32.42	67.58	100.00								
DIRECTIONAL PEAK			DIRECTIONAL PEAK												
AM - PEAK HR TIME	05:30 AM to 06:30 AM	06:15 AM to 07:15 AM	PM - PEAK HR TIME	03:30 PM to 04:30 PM	04:15 PM to 05:15 PM										
AM - PEAK HR VOLUME	1041	398	PM - PEAK HR VOLUME	465	905										
AM PERIOD (00:00-12:00)			PM PERIOD (12:00-24:00)												
TWO DIRECTIONAL PEAK			TWO DIRECTIONAL PEAK												
AM - PEAK HR TIME	06:30 AM to 07:30 AM			PM - PEAK HR TIME	03:45 PM to 04:45 PM										
AM - PEAK HR VOLUME	1012	382	1394	PM - PEAK HR VOLUME	427	890	1317								
AM - K FACTOR (%)	9.32			AM - K FACTOR (%)	8.81										
AM - D (%)	72.80	27.40	100.00	AM - D (%)	32.42	67.58	100.00								
NON-COMMUTER PERIOD (09:00-15:00)															
TWO DIRECTIONAL PEAK			6-HR, 12-HR, 24-HR PERIODS												
PEAK HR TIME	02:00 PM to 03:00 PM			AM 6-HR PERIOD (06:00-12:00)	DIR 1	DIR 2	Total								
PEAK HR VOLUME	341	457	798	AM 12-HR PERIOD (00:00-12:00)	3,400	2,075	5,475								
DIRECTIONAL PEAK	12:30 PM to 01:30 PM 02:00 PM to 03:00 PM			PM 6-HR PERIOD (12:00-18:00)	2,240	3,609	5,849								
PEAK HR TIME	12:30 PM to 01:30 PM 02:00 PM to 03:00 PM			PM 12-HR PERIOD (12:00-24:00)	3,037	4,971	8,008								
PEAK HR VOLUME	378	457	835	24 HOUR PERIOD	7,575	7,377	14,952								
				D (%)	50.66	49.34	100.00								

Run Date: 2010/07/09

Hawaii Department of Transportation
Highways Division

2009 Program Count - Summary

Highways Planning Survey Section

Site ID: B72075000200
Functional Class: RURAL-MINOR ARTERIAL
Location: KUNIA ROAD, 2.8 MILE N.W. OF H-1 FRWY /

Town: Oahu
Count Type: CLASS
Counter Type: Tube

Final AADT: 14500
Route No: 750
DIR 1: +MP DIR 2: -MP

DATE: 10/14/2009

TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
12:00-12:15	10	23	33	06:00-06:15	217	73	290	12:00-12:15	93	111	204	06:00-06:15	76	194	270
12:15-12:30	3	9	12	06:15-06:30	211	97	308	12:15-12:30	92	73	165	06:15-06:30	73	187	260
12:30-12:45	5	10	15	06:30-06:45	235	109	344	12:30-12:45	116	113	229	06:30-06:45	75	124	199
12:45-01:00	4	9	13	06:45-07:00	247	109	356	12:45-01:00	98	83	181	06:45-07:00	65	122	187
01:00-01:15	8	8	16	07:00-07:15	264	89	353	01:00-01:15	75	107	182	07:00-07:15	61	110	171
01:15-01:30	8	5	13	07:15-07:30	267	67	334	01:15-01:30	77	114	191	07:15-07:30	65	85	150
01:30-01:45	3	1	4	07:30-07:45	215	93	308	01:30-01:45	97	95	192	07:30-07:45	45	57	102
01:45-02:00	2	4	6	07:45-08:00	192	85	277	01:45-02:00	94	100	194	07:45-08:00	38	66	104
02:00-02:15	3	7	10	08:00-08:15	130	97	227	02:00-02:15	70	92	162	08:00-08:15	33	72	105
02:15-02:30	4	0	4	08:15-08:30	141	73	214	02:15-02:30	93	103	196	08:15-08:30	48	66	114
02:30-02:45	1	7	8	08:30-08:45	146	88	229	02:30-02:45	87	106	193	08:30-08:45	46	58	104
02:45-03:00	6	2	8	08:45-09:00	134	61	195	02:45-03:00	88	143	231	08:45-09:00	29	78	107
03:00-03:15	1	2	3	09:00-09:15	95	67	162	03:00-03:15	106	141	247	09:00-09:15	33	94	127
03:15-03:30	3	4	7	09:15-09:30	104	81	185	03:15-03:30	111	184	295	09:15-09:30	24	67	91
03:30-03:45	10	3	13	09:30-09:45	89	100	189	03:30-03:45	146	213	359	09:30-09:45	33	55	88
03:45-04:00	7	7	14	09:45-10:00	79	90	169	03:45-04:00	141	248	389	09:45-10:00	26	44	70
04:00-04:15	20	10	30	10:00-10:15	68	76	144	04:00-04:15	112	195	307	10:00-10:15	22	43	65
04:15-04:30	37	18	55	10:15-10:30	75	67	142	04:15-04:30	102	241	343	10:15-10:30	19	50	69
04:30-04:45	72	18	90	10:30-10:45	76	82	158	04:30-04:45	94	208	302	10:30-10:45	19	25	44
04:45-05:00	83	29	112	10:45-11:00	77	76	153	04:45-05:00	104	214	318	10:45-11:00	21	25	46
05:00-05:15	113	21	134	11:00-11:15	60	102	162	05:00-05:15	98	193	291	11:00-11:15	15	24	39
05:15-05:30	175	29	204	11:15-11:30	76	84	160	05:15-05:30	97	233	330	11:15-11:30	13	17	30
05:30-05:45	274	42	316	11:30-11:45	96	103	199	05:30-05:45	73	202	275	11:30-11:45	16	7	23
05:45-06:00	395	37	372	11:45-12:00	84	119	203	05:45-06:00	87	216	303	11:45-12:00	12	9	21

AM COMMUTER PERIOD (06:00-09:00)

PM COMMUTER PERIOD (15:00-19:00)

TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL	TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL
AM - PEAK HR TIME	06:30 AM to 07:30 AM			PM - PEAK HR TIME	03:30 PM to 04:30 PM		
AM - PEAK HR VOLUME	1013	374	1387	PM - PEAK HR VOLUME	501	897	1398
AM - K FACTOR (%)	73.04	26.96	8.92	PM - K FACTOR (%)	35.84	64.16	8.99
AM - D (%)			100.00	PM - D (%)			100.00
DIRECTIONAL PEAK				DIRECTIONAL PEAK			
AM - PEAK HR TIME	05:30 AM to 06:30 AM	06:15 AM to 07:15 AM		PM - PEAK HR TIME	03:15 PM to 04:15 PM	03:30 PM to 04:30 PM	
AM - PEAK HR VOLUME	1037	404		PM - PEAK HR VOLUME	510	897	

AM PERIOD (06:00-12:00)

PM PERIOD (12:00-24:00)

TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL	TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL
AM - PEAK HR TIME	06:30 AM to 07:30 AM			PM - PEAK HR TIME	03:30 PM to 04:30 PM		
AM - PEAK HR VOLUME	1013	374	1387	PM - PEAK HR VOLUME	501	897	1398
AM - K FACTOR (%)	73.04	26.96	8.92	PM - K FACTOR (%)	35.84	64.16	8.99
AM - D (%)			100.00	PM - D (%)			100.00

NON-COMMUTER PERIOD (09:00-15:00)

6-HR, 12-HR, 24-HR PERIODS

TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL	TWO DIRECTIONAL PEAK	DIR 1	DIR 2	TOTAL
PEAK HR TIME	11:45 AM to 12:45 PM			AM 6-HR PERIOD (06:00-12:00)	3,376	2,083	5,461
PEAK HR VOLUME	385	416	801	AM 12-HR PERIOD (00:00-12:00)	4,565	2,388	6,953
DIRECTIONAL PEAK				PM 6-HR PERIOD (12:00-18:00)	2,351	3,728	6,079
PEAK HR TIME	12:00 PM to 01:00 PM	02:30 PM to 03:00 PM		PM 12-HR PERIOD (12:00-24:00)	3,258	5,347	8,605
PEAK HR VOLUME	399	444		24 HOUR PERIOD	7,823	7,735	15,558
				D (%)	50.28	49.72	100.00

Ho'ohana Solar Farm Project Trip Generation Calculations

Project Trip Type:	Weekday Trip Generation												Notes	
	Daily Trips Total	Peak Hours						Off-Peak Hours						
		AM Peak Hour Trips (6:30 AM - 7:30 AM)			PM Peak Hour Trips (4:45 PM - 5:45 PM)			Daytime Off-Peak Trips (7:30 AM - 4:45 PM)			Nighttime Trips (5:45 PM - 6:30 AM)			
	Total	IN	OUT	Total	IN	OUT	Total	IN	OUT	Total	IN	OUT		
Project Construction Phase*														
Automobile Trips:														
Personal Vehicles	200	100	100	0	100	0	100	0	0	0	0	0	0	100% of all construction employees will travel by personal vehicle to the project site.
<i>Total Automobile Trips</i>	200	100	100	0	100	0	100	0	0	0	0	0	0	
Heavy Vehicle Trips:														
Shuttle Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	
Equipment Deliveries	20	5	5	0	5	0	5	0	0	0	0	0	0	Includes delivery of solar panel and electrical equipment. Assumes 20% of deliveries occur during peak hours
Employee Food Deliveries	4	0	0	0	0	0	0	4	2	2	0	0	0	Food deliveries to arrive during daytime off-peak hours
Excavation, Debris and Material Hauling, Misc Deliveries.	16	3	3	0	3	0	3	0	0	0	0	0	0	Includes miscellaneous deliveries, excavation, debris, and materials hauling.
<i>Total Heavy Vehicle Trips</i>	40	8	8	0	8	0	8	4	2	2	0	0	0	
Total Construction Phase Trips	240	108	108	0	108	0	108	4	2	2	0	0	0	
Project Operational Phase														
<i>Employee Trips (Individual Auto Trips)</i>	10	5	5	0	5	0	5	0	0	0	0	0	0	Employee Trips Based Upon Peak Staffing Levels of 5 Full Time Employees
Total Operational Phase Trips	10	5	5	0	5	0	5	0	0	0	0	0	0	
<small>*Construction Phase Trip Generation Assumptions: *Based upon peak construction phase of a 50 Megawatt Facility over a 9-month construction period. If the project construction period lasts for longer than 9 months, the number of peak hour trips would be slightly higher. *Project Construction Phase trip generation is based upon a total workforce of 100 employees. *Automobiles are FHWA Class 1 - 3 vehicles. Heavy vehicles are FHWA Class 4 and above vehicles.</small>														

Ho'ohana Solar 1, LLC
Mr. Larry Greene
8001 Irvine Center Drive, Suite 1250
Irvine, California 92618

October 8, 2014

SUBJ: FAA "Determinations of No Hazard to Airspace" Letters with Issued Dated
October 8, 2014

Dear Mr. Greene:

Ho'ohana Solar 1, LLC ("Ho'ohana") received twenty (20) Federal Aviation Administration "Determinations of No Hazard to Airspace" letters for the twenty (20) Aeronautical Studies initiated as part of the Ho'ohana Solar Project, the 20 MW (ac) single axis tracker solar PV field, on Oahu, Hawaii. The aeronautical studies revealed the structures do not exceed obstruction standards and would not be a hazard to air navigation. The FAA requires a Form 7460-2, Notice of Actual Construction or Alteration, be filed within 5 days of the construction reaches its greatest height.

Background: On August 10, 2014, Ho'ohana submitted the required FAA Form 7460s (on-line) with the pertinent project information. In addition, Ho'ohana supplied the Ho'ohana Solar Site Layout map and Solar Glare Hazard Analysis Reports for the Honolulu Airport. As typically requested by FAA, Ho'ohana presented the project area as twenty (20) perimeter points.

Summary Table:

Aeronautical Study No.	FAA Findings
2014-AWP-5778-OE	Determination of No Hazard to Air Navigation
2014-AWP-5779-OE	Determination of No Hazard to Air Navigation
2014-AWP-5780-OE	Determination of No Hazard to Air Navigation
2014-AWP-5781-OE	Determination of No Hazard to Air Navigation
2014-AWP-5782-OE	Determination of No Hazard to Air Navigation
2014-AWP-5783-OE	Determination of No Hazard to Air Navigation
2014-AWP-5784-OE	Determination of No Hazard to Air Navigation
2014-AWP-5785-OE	Determination of No Hazard to Air Navigation
2014-AWP-5786-OE	Determination of No Hazard to Air Navigation
2014-AWP-5787-OE	Determination of No Hazard to Air Navigation
2014-AWP-5788-OE	Determination of No Hazard to Air Navigation
2014-AWP-5789-OE	Determination of No Hazard to Air Navigation
2014-AWP-5790-OE	Determination of No Hazard to Air Navigation
2014-AWP-5791-OE	Determination of No Hazard to Air Navigation
2014-AWP-5792-OE	Determination of No Hazard to Air Navigation
2014-AWP-5793-OE	Determination of No Hazard to Air Navigation
2014-AWP-5794-OE	Determination of No Hazard to Air Navigation
2014-AWP-5795-OE	Determination of No Hazard to Air Navigation
2014-AWP-5796-OE	Determination of No Hazard to Air Navigation
2014-AWP-5797-OE	Determination of No Hazard to Air Navigation

Please do not hesitate to contact me at (808) 870-8179 or cliff@meridian158.com.

Sincerely,

A handwritten signature in black ink that reads "Cliff Smith". The signature is written in a cursive style with a horizontal line extending from the end of the name.

Clifford Smith
Meridian 158, LLC

Enclosures: 20 FAA Determinations of No Hazard to Air Navigation



Mail Processing Center
 Federal Aviation Administration
 Southwest Regional Office
 Obstruction Evaluation Group
 2601 Meacham Boulevard
 Fort Worth, TX 76193

Aeronautical Study No.
 2014-AWP-5778-OE

Issued Date: 10/08/2014

Larry Greene
 Ho'ohana Solar 1, LLC
 8001 Irvine Center Dr, Suite 1250
 Irvine, CA 92618

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Solar Panel Ho'ohana Solar (Point #1)
 Location: Honolulu, HI
 Latitude: 21-24-43.60N NAD 83
 Longitude: 158-01-44.51W
 Heights: 477 feet site elevation (SE)
 6 feet above ground level (AGL)
 483 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed and maintained in accordance with FAA Advisory circular 70/7460-1 K Change 2.

This determination expires on 04/08/2016 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

If we can be of further assistance, please contact our office at (310) 725-6557. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2014-AWP-5778-OE.

Signature Control No: 226431128-231390709

(DNE)

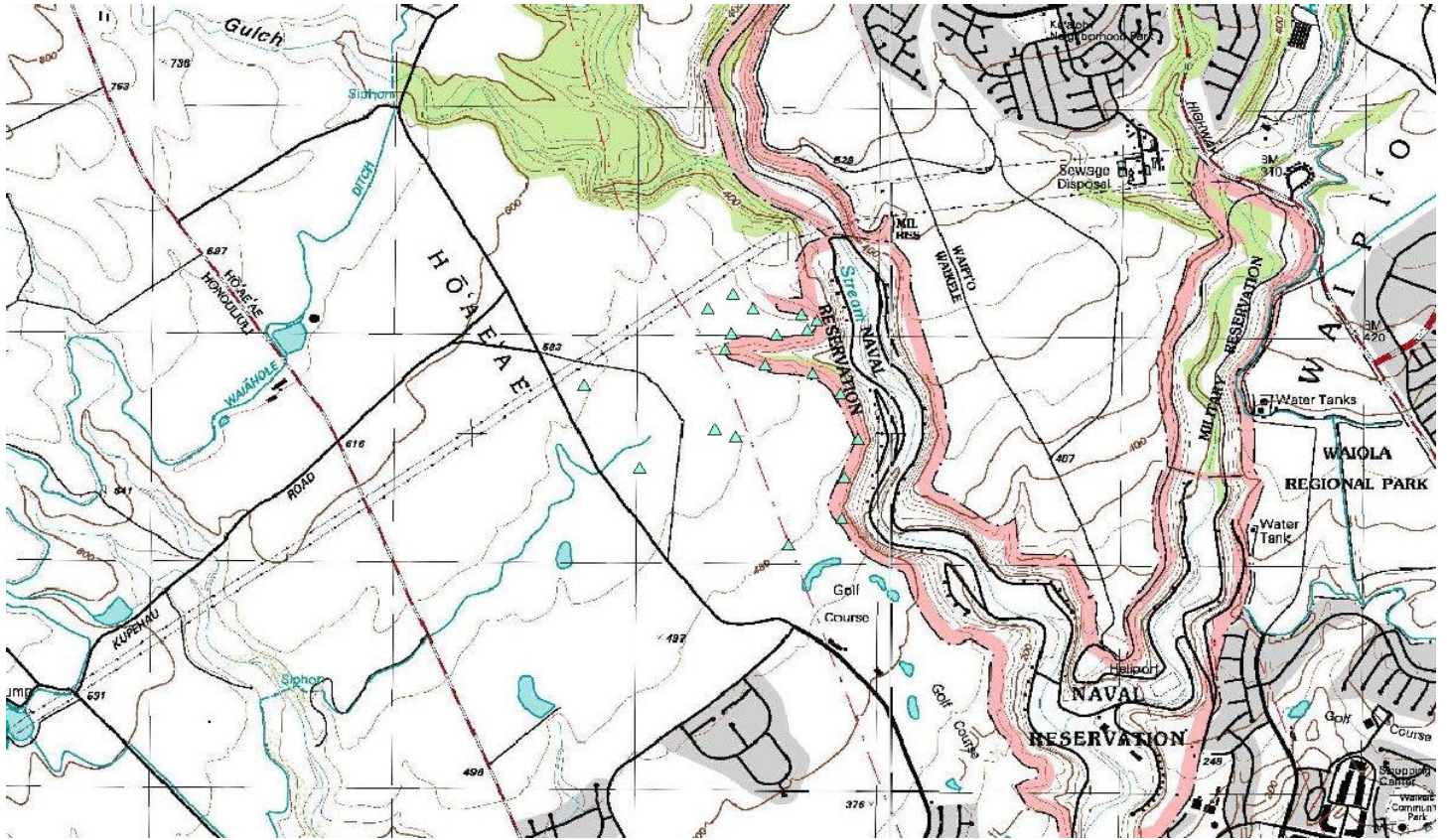
Karen McDonald
Specialist

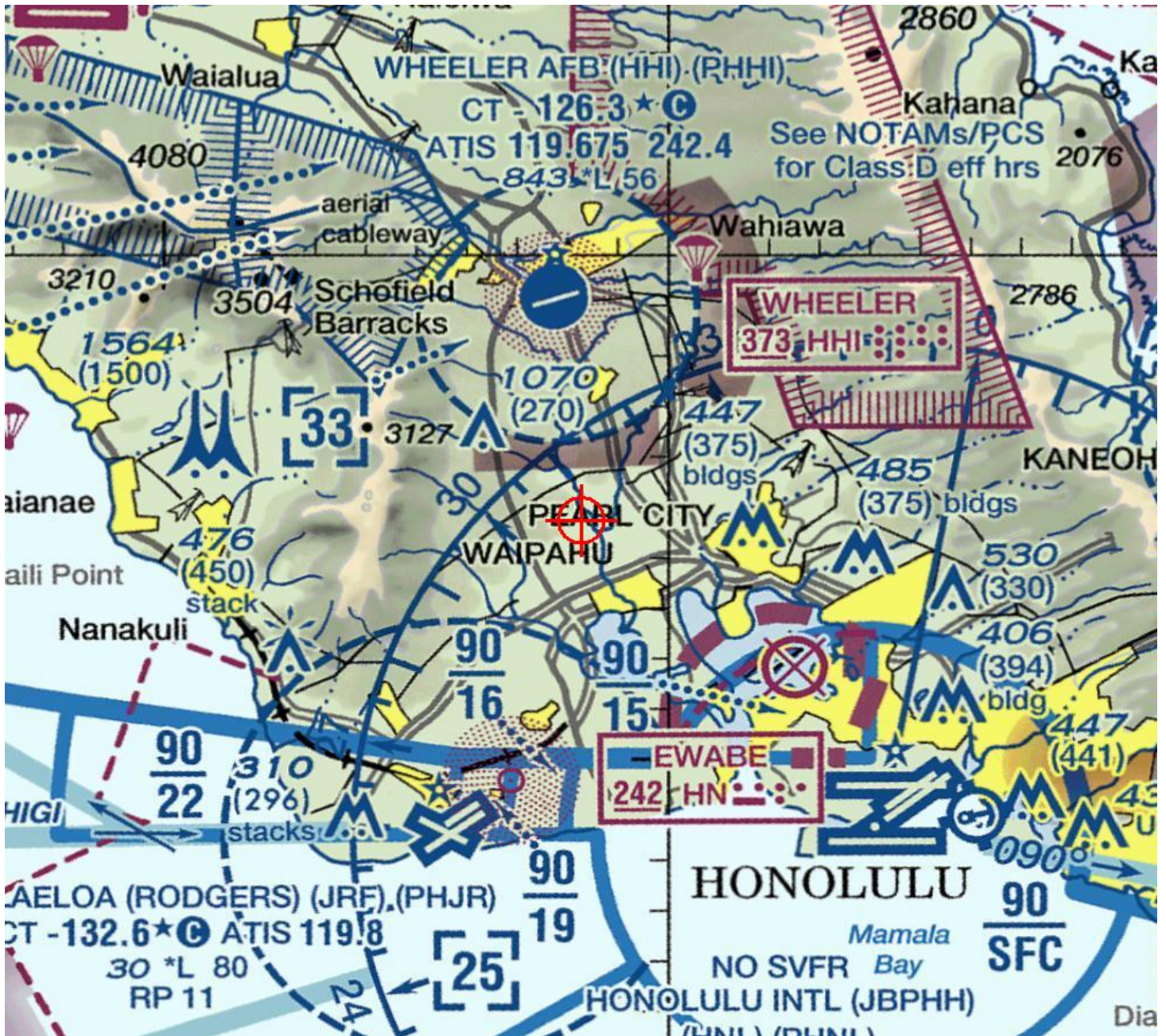
Attachment(s)
Case Description
Map(s)

Case Description for ASN 2014-AWP-5778-OE

A 20 MW PV single axis tracker project will be constructed on 124 acres. Attached are a project site plan and a solar glare study to the HNL Airport.

This is Point 1 of 20 Points, enclosing the entire project area. A table of the 20 points is included as Exhibit A of the solar glare study.







Federal Aviation
Administration

« OE/AAA

Project Submission Success
Project Name: HO'OH-000284955-14

Project HO'OH-000284955-14 has been submitted successfully to the FAA.

Your filing is assigned Aeronautical Study Number (ASN):

2014-AWP-5778-OE
2014-AWP-5779-OE
2014-AWP-5780-OE
2014-AWP-5781-OE
2014-AWP-5782-OE
2014-AWP-5783-OE
2014-AWP-5784-OE
2014-AWP-5785-OE
2014-AWP-5786-OE
2014-AWP-5787-OE
2014-AWP-5788-OE
2014-AWP-5789-OE
2014-AWP-5790-OE
2014-AWP-5791-OE
2014-AWP-5792-OE
2014-AWP-5793-OE
2014-AWP-5794-OE
2014-AWP-5795-OE
2014-AWP-5796-OE
2014-AWP-5797-OE

Please refer to the assigned ASN on all future inquiries regarding this filing.

Please return to the system at a later date for status updates.

It is the responsibility of each e-filer to exercise due diligence to determine if coordination of the proposed construction or alteration is necessary with their state aviation department. Please use the link below to contact your state aviation department to determine their requirements:

[State Aviation Contacts](#)

To ensure e-mail notifications are delivered to your inbox please add noreply@faa.gov to your address book. Notifications sent from this address are system generated FAA e-mails and replies to this address will NOT be read or forwarded for review. Each system generated e-mail will contain specific FAA contact information in the text of the message.

EXHIBIT 20C

HO'OHANA SOLAR PROJECT

SUMMARY SOLAR GLARE HAZARD ANALYSIS REPORT TABLE FOR HONOLULU INTERNATIONAL AIRPORT

8/10/2014

Exhibit Label	DESCRIPTION	RESULTS	NOTE
Exhibit A	Coordinate Format References	NA	Sandia Lab uses decimal format coordinate while FAA Form 7460 is in NAD83 (degrees) format. Conversion summary table provided.
Exhibit B	Obervation Point: Air Traffic Control Tower	No glare found	
Exhibit C	Flight Path: Runway 4 L	No glare found	
Exhibit D	Flight Path: Runway 4 R	No glare found	
Exhibit E	Flight Path: Runway 22 L	Glare found	Low potential for temporary after-image. (At 1.5 mile, 1.75 mile and 2.0 mile from Threshold.)
Exhibit F	Flight Path: Runway 22 R	Glare found	Low potential for temporary after-image. (At 1.5mile, 1.75 mile and 2.0 mile from Threshold.)
Exhibit G	Flight Path: Runway 26 L	No glare found	
Exhibit H	Flight Path: Runway 26 R	No glare found	
Exhibit I	Flight Path: Runway 8 L	No glare found	
Exhibit J	Flight Path: Runway 8 R	No glare found	
Exhibit K	Sanda Labs: Potential Ocular Impacts Graph	NA	Sanda Lab reference graph to understand ocular impact from glare.

SOLAR GLARE HAZARD ANALYSIS REPORT

HO'OHANA SOLAR PROJECT

TO

HONOLULU INTERNATIONAL AIRPORT

PROJECT COORDINATE SUMMARY TABLE (REFERENCE)

EXHIBIT A

Ho'ohana Solar Project
Coordinate Format References for Project

Solar Glare Hazard Analysis Format

Digital Globe (USGS)

* Points	Latitude	Longitude
1	21.41211	-158.02903
2	21.41316	-158.02691
3	21.41481	-158.02681
4	21.41632	-158.02627
5	21.41812	-158.02696
6	21.41892	-158.02807
7	21.41927	-158.02996
8	21.41987	-158.03155
9	21.42051	-158.03131
10	21.42047	-158.02951
11	21.42065	-158.02828
12	21.42102	-158.0279
13	21.42128	-158.02851
14	21.42149	-158.03045
15	21.42209	-158.03124
16	21.42151	-158.03224
17	21.41848	-158.03717
18	21.41518	-158.03496
19	21.41672	-158.03196
20	21.41641	-158.03114

FAA Form 7460 Format

NAD 83

Latitude	Longitude
21° 24' 43.5954"	-158° 1' 44.508"
21° 24' 47.376"	-158° 1' 36.8754"
21° 24' 53.3154"	-158° 1' 36.516"
21° 24' 58.7514"	-158° 1' 34.572"
21° 25' 5.2314"	-158° 1' 37.056"
21° 25' 8.1114"	-158° 1' 41.052"
21° 25' 9.372"	-158° 1' 47.8554"
21° 25' 11.5314"	-158° 1' 53.58"
21° 25' 13.836"	-158° 1' 52.7154"
21° 25' 13.692"	-158° 1' 46.2354"
21° 25' 14.3394"	-158° 1' 41.8074"
21° 25' 15.6714"	-158° 1' 40.4394"
21° 25' 16.6074"	-158° 1' 42.636"
21° 25' 17.3634"	-158° 1' 49.62"
21° 25' 19.524"	-158° 1' 52.4634"
21° 25' 17.436"	-158° 1' 56.064"
21° 25' 6.5274"	-158° 2' 13.812"
21° 24' 54.6474"	-158° 2' 5.856"
21° 25' 0.192"	-158° 1' 55.0554"
21° 24' 59.0754"	-158° 1' 52.1034"

* Project Area Points (project corners)



DEPARTMENT OF THE NAVY

COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO:

11000
Ser N4(203)/ 5819
11 Jan 96

Mr. Clarence K. Tanonaka
Assistant to the President
ParEn, Inc.
dba Park Engineering
Kawaihao Plaza, Suite 300
567 South King Street
Honolulu, HI 96813-3036

Dear Mr. Tanonaka:

Subj: ROYAL KUNIA PHASE II INCREMENT 3; PROPOSED STATE LAND USE CHANGE
(HALEKUA DEVELOPMENT CORPORATION)

In response to your letter of August 21, 1995, informing the Navy of the subject petition for zoning and land use change for the Royal Kunia Phase II, increments II and III, we are providing the following comments.

a. The proposed Royal Kunia Phase II, Increment 3 development borders the Waikele Branch of Naval Magazine Lualualei. In the past, the Waikele Branch mission was to receive, renovate, maintain, store, and issue ammunition and explosives for the Navy, Marine Corps, Army, and Air Force. Previous comments provided by the Navy regarding the Royal Kunia project were based on the premise that ordnance would continue to be stored and handled at the Waikele Branch. As the Navy reacts to changing world events, dynamic forces shape and inevitably affect local conditions. Such has been the case with the Waikele Branch of Naval Magazine Lualualei.

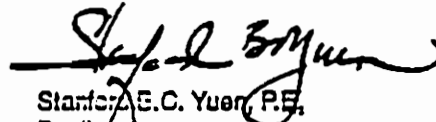
All ordnance has been removed from the Waikele Branch and it is no longer used for ordnance storage. Although the explosives safety zones still remain along the station boundary, steps have been taken to obtain higher authority approval to disestablish them. The Navy is neither for, nor against, the proposed development; however, once the explosives safety zones cease to exist, our previous concerns and comments pertaining to civilian urban development adjacent to the Waikele Branch are no longer applicable.

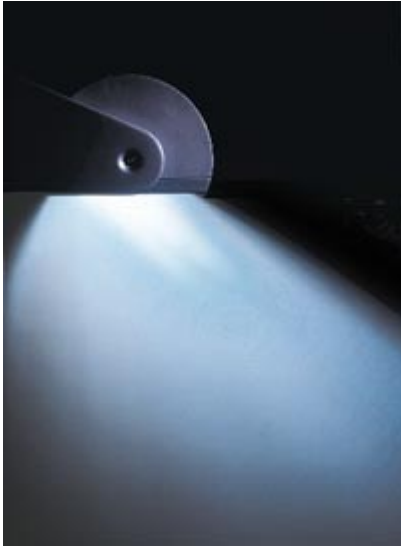
b. As your proposal did not address the effects of drainage on Waikele Stream and Navy lands, we request that you coordinate future off-site drainage improvements with the Navy such that there be no increase in the amount, nor significant change in the nature, of storm runoff onto Navy land due to the development compared with what has been experienced with the subject lands in sugarcane cultivation.

Subj: ROYAL KUNIA PHASE II INCREMENT 3: PROPOSED STATE LAND USE CHANGE
(HALEKUA DEVELOPMENT CORPORATION)

We appreciate the opportunity to review the proposal and provide our comments.
Our point of contact is Mr. Stanford Yuen (N42) Facilities Engineer at
474-0439.

Sincerely,


Stanford Yuen, P.E.
By direction



Cutoff Classifications

Luminaire classification for
controlling stray light

[Full Cutoff](#) • [Cutoff](#) • [Semi-Cutoff](#)
(rollover a selection above)

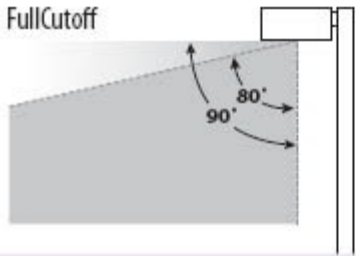
Luminaire Classifications for Controlling Glare

The Illuminating Engineering Society of North America (IESNA, or IES) provides classifications for luminaires according to their glare control and high-angle brightness. These classifications include full cutoff, cutoff, semi-cutoff and noncutoff.

Lithonia Lighting uses Nighttime Friendly to identify products that reduce negative impacts on the nighttime environment. Products designated with the Nighttime Friendly logo have no uplight, meet the IESNA definition for full cutoff optics and reduce high-angle brightness. These measures of luminaire performance are consistent with sustainability standards for light pollution reduction.

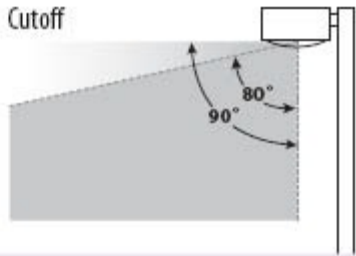
For applications where there is a concern with light trespass on neighboring properties, consider products that limit light behind the pole such as the Type 4 sharp cutoff optical system or house side shielding.

FullCutoff



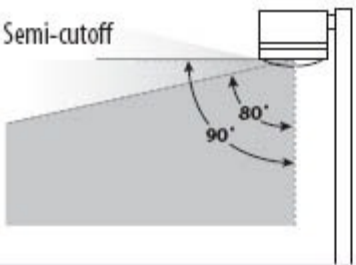
ALLOWS:
No light at or above 90° 0%
100 cd per 1000 lamp lumens at or above 80° 10%

Cutoff



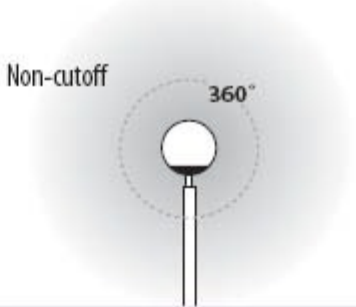
ALLOWS:
25 cd per 1000 lamp lumens at or above 90° 2.5%
100 cd per 1000 lamp lumens at or above 80° 10%

Semi-cutoff



ALLOWS:
50 cd per 1000 lamp lumens at or above 90° 5%
200 cd per 1000 lamp lumens at or above 80° 20%

Non-cutoff



ALLOWS:
Unrestricted distribution of light at any angle

Classification	Definition	Benefits	Limitations
Full Cutoff	Zero intensity at or above horizontal (90° above nadir) and limited to a value not exceeding 10% of lamp lumens at or above 80°.	Limits spill light onto adjacent property, reduces glare. No light is emitted directly from the luminaire into the sky.	May reduce pole spacing to maintain uniformity and increase pole and luminaire quantities.
Cutoff	Intensity at or above 90° (horizontal) no more than 2.5% of lamp lumens, and no more than 10% of lamp lumens at or above 80°.	Small increase in high-angle light allows increased pole spacing.	May allow some uplight from luminaire. Typically a small overall impact on sky glow.
Semi-Cutoff	Intensity at or above 90° (horizontal) no more than 5% of lamp lumens and no more than 20% at or above 80°.	High-angle light accents taller vertical surfaces such as buildings. Most light is still directed downward.	Little control of light at property line. Potential for increased glare when using high wattage luminaires. Typically directs more light into the sky than cutoff.
Non-cutoff	No limitations on light distribution at any angle.	Uniform luminous surfaces such as internally illuminated signs or globes. Wattage should be limited. Suitable for sports lighting, facade, landscape or other applications where luminaires are tilted due to limitations in pole or fixture locations.	Location and aiming are critical. Most likely of all categories to produce offensive brightness and sky glow.

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI'I

In the Matter of the Petition of

HALEKUA DEVELOPMENT
CORPORATION, a Hawai'i corporation

To Amend the Agricultural Land Use District
Boundary into the Urban Land Use District for
Approximately 503.886 Acres at Waikele and
Ho'ae'ae, 'Ewa, O'ahu, City and County of
Honolulu, State of Hawai'i, Tax Map Key No.
9-4-02: 1, portion of 52, 70 and 71

DOCKET NO. A92-683

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that due service of a copy of the foregoing was served upon the following

by hand delivery, on October 8, 2014, addressed to:

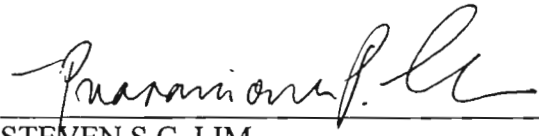
LEO R. ASUNCION, JR., Acting Director
Office of Planning
State Office Tower, 6th Floor
235 South Beretania Street
Honolulu, Hawai'i 96813

DAVID M. LOUIE, Esq.
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Deputy Attorney General
Commerce and Economic Development
Department of the Attorney General
425 Queen Street
Honolulu, Hawai'i 96813

GEORGE I. ATTA, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

DONNA Y.L. LEONG, Esq.
DON S. KITAOKA, Esq.
Deputy Corporation Counsel
Department of the Corporation Counsel
Honolulu Hale
530 South King Street, Room 110
Honolulu, Hawai'i 96813

DATED: Honolulu, Hawai'i, October 8, 2014.



STEVEN S.C. LIM
JENNIFER A. BENCK
PUANANIONAONA P. THOENE

Attorneys for Successor Petitioner to Parcel 52
HO'OHANA SOLAR 1, LLC