Biological Surveys Conducted for the Proposed Kailua Park Master Plan, North Kona District, Island of Hawai‘i.

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Introduction

The County of Hawai‘i’s Department of Parks and Recreation is preparing a Master Plan for the future redevelopment of Kailua Park, which is located in Kailua, North Kona District Island of Hawaii (Figure 1). The plan encompasses approximately 117-acres of land. Included are the Kailua Park, managed by the county, as well as the former Old Airport State Recreation Area, also known as the Old Airport Park or Maka‘eo recently conveyed to the county. The project will be developed in phases over the next 20 years.

The primary purpose of these surveys was to determine if there were any botanical, avian or mammalian species currently listed, or proposed for listing as endangered or threatened under either the federal or the State of Hawai‘i’s endangered species programs on, or within the immediate vicinity of the project depicted on Figure 1. Federal and State of Hawai‘i listed species status follows species identified in the following referenced documents (Division of Land and Natural Resources (DLNR) 1998, Federal Register 2005, U. S. Fish & Wildlife Service (USFWS) 2005, 2009). Fieldwork was conducted on October 21 and 23, 2009.

Avian phylogenetic order and nomenclature follows *The American Ornithologists’ Union Check-list of North American Birds 7th Edition* (American Ornithologists’ Union 1998), and the 42nd through the 50th supplements to *Check-list of North American Birds* (American Ornithologists’ Union 2000; Banks et al. 2002, 2003, 2004, 2005, 2006, 2007, 2008, Chesser et al., 2009). Mammal scientific names follow *Mammals in Hawaii* (Tomich 1986). Plant names follow *Manual of the Flowering Plants of Hawai‘i* (Wagner et al., 1990, 1999) for native and naturalized flowering plants, and *A Tropical Garden Flora* (Staples and Herbst, 2005) for crop and ornamental plants. Place names follow *Place Names of Hawaii* (Pukui et al., 1974).

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

General Site and Project Description

The project site includes the existing county managed Kailua Park, which includes ball fields, a gymnasium and the Kona Community Aquatics Center, tennis courts, and horseshoe park which are located within the southern third of the site. It also includes the deactivated runway, events pavilion, in-line hockey rink and a skateboard park and two unfinished canoe *hale* in the central portion of the site. The northern portion of the site includes portions of the runway, the Maka‘eo Walking and Jogging path and is one of the few undeveloped shoreline areas in West Hawai‘i that is accessible to the public.

The project site is gently slopes from north-to-south from an elevation of ~ 23 feet (7 meters) above mean sea level (ASL) at the northeastern corner of the project site, down to an elevation of ~ 3-feet (1 meter) ASL, on the southwestern side of the Beach Park. The natural substrate present within the project site is made up of mostly *pāhoehoe*, flows disgorged from Mount Hualālai between 1,500 and 3,000 years ago (Wolfe and Morris 1996).


081101/046 090409 r1
Project Boundary
Cultural Preserve and Garden
Ala Kahakai
Future Road
Potential Dog Park
Makaeo Walking/Jogging Path
(Friends for Fitness)
Bike/Ped Path
Pawai Bay
Potential Canoe Launching Site (Not Recommended)
Interpretive Center
Bike/Ped Path
Occasional Surf Spot
Ala Kahakai
Reversed Angle Parking
Bio-Basins
(Stormwater retention, native plant restoration)
Primary Surf Spot
Beach Center
(Concession, interpretive center, life safety)
Tennis Complex 6 courts
Events Pavilion
Potential Canoe Launching Site
Fire Lane Emergency Access
Optional Locations for Hula Stages
Great Lawn w/Pavilion
Potential Canoe Launching Site
In Line Hockey
Tot Lot
New Parking with roadway connection to gym parking
Horseshoes
(stays)
Ala Kahakai
Grade Baseball Field to provide room for regulation Football Field, Requires relocating one baseball field
Kiddie Pond
Temporary DPR Base Yard/ Permanent Skate Park
Canoe Halau 4 Hale with center loading area and exhibition bldg and restroom
Realign Makala Blvd (Possible)
Makala Blvd.
Total Parking 1,374 stalls
Senior Center w/25 yard pool
Youth Center
Retain Restroom
(Historic Resource)
Temporary State Base Yard/ Future Tot Lot
Convert to Concession, Restroom, Soccer Storage
Kona Community Aquatics Center
Kekuaokalani Gym
Field D Old Airport Lights
Field E Main Soccer Field
Field C Baseball/ Softball
Field B Football/ Soccer
Field A Simmons Baseball Field
Loloku St.
Kaiwi St.
Pawai Pl.
Kuakini Hwy
Sewer Pump Station
Outdoor Basketball Courts
New Restroom Shower
New Restroom Shower
Queen Ka'ahumanu Hwy
Keahole-Kona International Airport
Kailua-Kona
Keauhou
Mauna Kea
Hilo
PROJECT AREA
Island of Hawai'i
KAILUA PARK
(aka Old Airport Park/Makaeo)
Master Planning Project
Prepared for:
County of Hawaii
Department of Parks and Recreation
Prepared by:
KIMURA INTERNATIONAL
0 200 400
SCALE IN FEET
August 2009
FINAL MASTER PLAN

The Master Plan divides the park in to three major geographic and activity zones identified as follows:

- Southern third: a high intensity, active outdoor and indoor sports zone
- Central third: a moderate-intensity, new community center
- Northern third: a low-intensity, passive, open space and cultural zone

The Master Plan identifies the following goals for each of the three zones identified above:

South: Active Sports Zone

The Active Sports Zone encompasses the existing County-managed park which includes ball fields, a gymnasium and the Kona Community Aquatics Center, tennis courts, and horseshoe park. The plan proposes retaining these sporting venues, and upgrading or replacing inadequate, aging facilities. A major proposal is to relocate the tennis courts from the congested ball field complex, in order to improve vehicular, bicycle and pedestrian circulation and increase parking (Figure 1).

Figure 2 – Ball fields in the southern zone looking northwest

Central: Community Center Complex

The central area will become a major focal point of the park. Currently, the area includes the Events Pavilion, in-line hockey rink, and two unfinished canoe *hale*. The major proposal for this

zone is development of a new community center complex, which will include a senior center and youth center, intended to encourage interaction between the generations. A new park entry will include a roundabout at Kuakini Highway, providing a landmark and a sense of arrival. Radiating from the roundabout, park users will have an option to continue *makai* to a passenger drop-off area serving the senior and youth center and the Events Pavilion. The road will terminate here at a "great lawn" providing open views to the ocean.

Another road will lead from the park entry to the canoe *hālau* complex, which will include four *hale* for canoe storage and an exhibition building. A new six-court tennis complex is sited next to the canoe *hālau*.

The central zone will provide a transitional area between the highly active and passive ends of the park. A multi-use, bike and pedestrian path have been proposed that will circle the entire park complex (Figure 1).

Figure 3 Existing events pavilion and unfinished canoe *hālau* and runway

North: Passive Open Space and Cultural Zone

The northern portion of the site is one of the few undeveloped shoreline areas in West Hawai'i that is accessible to the public. The plan proposes that it remain a zone of natural open space and a beach park. A major proposal is the removal of the asphalt runway that dominates the site. The runway would be replaced by a meandering beach access road.

Figure 4 – Typical coastal strand vegetation north of the runway

The northern zone is also rich in cultural and archaeological resources. An interpretive center is proposed at the far end of the beach access road. Interpretive signage and appropriate landscaping using native species where appropriate can be used to keep people out of sensitive areas.

Additional beach pavilions are proposed along the shoreline. The Maka‘eo Walking and Jogging Path, a symbol of community spirit and involvement, will be retained and enhanced. A dog park is also proposed which if developed would be located north of the Maka‘eo Walking and Jogging Path (Figure 1).

The vegetation on the site is best described as a mixture of coastal strand closest to the ocean shore, dry lowland grassland, mostly highly disturbed, and managed landscaping.

Botanical Survey Methods

The botanical survey was undertaken on October 21, 2009 utilizing wandering transects that traversed all parts of the subject parcel. The route of the botanical survey was recorded by GPS as the survey progressed, so that coverage could be assessed as the survey progressed. The survey was conducted in the dry season and therefore some plants typical of this site, especially annuals, were likely not observed. At highly disturbed lowland sites, such as the old Kona airport, missed species due to seasonal constraints are expected to be introduced (non-native), weedy species.

Figure 5 – Northern end of property showing kiawe/fountain grass savannah

Figure 6 - The Maka‘eo Walking and Jogging Path showing ornamental planting looking northeast

Further, due to rigorous maintenance (mowing) in the more developed (south) part of the site, some lawn grasses proved difficult to identify. For a few specimens not recognized in the field, photographs were taken and/or material collected for identification in the laboratory.

The park includes an extensive community garden/planting area along the Maka'eo Walking and Jogging Path. Plantings in this area are mostly ornamentals, and the individual plots are well maintained, watered, and weeded. Several gardeners have developed specific themes and have extensive collections of cactus and succulents, culinary herbs, or native Hawaiian plants. Although an attempt was made to include the flora found in these many small gardens in the botanical survey results, the large number of ornamentals, many newly planted (i.e., juveniles lacking diagnostic characteristics) made arriving at a complete list all but impossible without devoting considerable more time to the field effort. Consequently, the results of the survey are incomplete with respect to many of the collections of ornamental plants present at this site.

Botanical Survey Results

A plant checklist (Table 1) was compiled from field observations, with entries arranged alphabetically under plant family names (standard practice). Included in the list are scientific name, common name, and status (whether native or non-native) for each species observed on the property. Species status given in **bold** indicates a plant of some interest to the Hawaiian Islands flora. It is worth noting for this survey location that "status" is the assigned relationship of a species to natural Hawaiian Islands environments. Thus, "naturalized" (Nat) is assigned to a species that is non-native but successfully established in the wild. The landscaped and garden areas include some weeds (naturalized species), but also some native and non-native species that have been planted and are being cared for. These plants are in effect "ornamentals" at this location and are indicated as such by Note (1) in the last column.

In addition to identifying the plants present within the study site, qualitative estimates of plant abundance were made. These are coded in the table as explained in the Legend to Table 1 and apply to observations made during the present survey. For some species, a two-level system of abundance is used: the letter-number codes indicating species that have a limited distribution (e.g., found in only one small area of the property), but present there in numbers exceeding just a few individuals. For example, an abundance rating of "R" indicates a plant encountered only once or twice during the entire survey. An "R2" indicates a plant encountered in just one or two places, but with several to many individuals present where encountered. An "R3" would be a plant seldom encountered (i.e., rare), but locally abundant in one or more of the locations where it was encountered.

The project area supports several basic types of vegetation: 1) strand vegetation associated with the rocky and sand substrata inland from the ocean shoreline; 2) Mostly undisturbed areas of *pāhoehoe* supporting fountain grass; 3) highly disturbed areas of the old runway and buildings; and 4) landscaped and maintained grounds surrounding the large sports complex at the south end. There are also significant areas of transition between the strand and the disturbed areas representing both maintained and unmaintained areas of beach access (the small beach parks).

Abundance ratings in Table 1 are given for three different vegetation areas on the property: the grounds comprising the landscaped sports complex (DE), the mostly disturbed areas (DI) inland from the strand in the northern two-thirds of the parcel, and the narrow coastal strand (CS) itself.

Table 1 – Flora Listing for the Kailua Park Site

Species listed by family	***Common name***	**ST**	**Abundance**			**NT**
			DE	DI	CS	
		FERN and FERN ALLIES				
NEPHROLEPIDACEAE						
Nephrolepis cordifolia (L.) C. Presl.	---	**Ind**	R	R	--	1
Nephrolepis multiflora (Roxb.) F.M. Jarrett ex C.V. Morton	---	Nat	--	R	--	1
POLYPODACEAE						
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	*lauae*	Nat	R	R	--	1
PSILOTACEAE						
Psilotum nudum (L.) P. Beauv.	*moa*	**Ind**	R	--	--	
PTERIDACEAE						
Pteris vittata L.	cliff brake	Nat	R	--	--	
		GYMNOSPERMS				
ARAUCARIACEAE						
Araucaria columnaris (G. Forster) J.D. Hook.	Cook-pine	Nat	R3	--	--	1
CYCADACEAE					--	
Cycas revoluta Thunb.	sago palm	Orn	R	--	--	
		FLOWERING PLANTS				
		DICOTYLEDONES				
ACANTHACEAE						
Barleria repens C. Nees	pink-Ruella	Orn	--	R	--	
Ruellia brittoniana E. Leonard	---	Nat	--	R	--	1
Strobilanthes sp.	---	Orn	--	R	--	4
AIZOACEAE					--	
Aptenia cordifolia (L.) N.E. Brown	hearts and flowers	Orn	R	U3	--	
Sesuvium portulacastrum (L.) L.	*ʻākulikuli*	**Ind**	--	U	O	1
ALLOEACEAE						
Aloë vera (L.) N.L. Burm.	aloe vera	Orn	--	U	--	
Aloë sp.	---	Orn	--	R	--	
AMARANTHACEAE						
Alternantheria pungens Kunth	khaki weed	Nat	--	R	--	
Amaranthus spinosus L.	spiny amaranth	Nat	R	--	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
Celosia cristata L.	cockscomb	Orn	--	U	--	
ANACARDIACEAE						
Mangifera indica L.	mango	Nat	R	--	--	1,4
Schinus terebinthefolius Raddi	Christmas berry	Nat	R	O	R	
APOCYNACEAE						
Adenium obesum (Forsk.) J. Roemer & J.A. Schultes	desert-rose	Orn	--	R	--	
Carissa macrocarpa (Ecklon) A. de Cand.	natal plum	Orn	U	--	--	
Catharanthus roseus (L.) G. Don	Madagascar periwinkle	Nat	R	O	--	1
Plumeria obtusa L.	Singapore plumeria	Orn	R	R	--	
Plumeria rubra L.	plumeria, frangipani	Orn	U	U	--	
ARALIACEAE						
Schefflera actinopylla (Endlich.) Harms	octopus tree	Nat	R	R	--	1
Schefflera arboricola (Hayata) Merr.	dwarf schefflera	Orn	--	R	--	
ASCLEPIADACEAE						
Stapelia gigantea N.E. Brown	giant toad flower	Nat	--	R	--	1
ASTERACEAE (COMPOSITAE)						
Artemisia vulgaris L.	mugwort	Orn	--	R	--	
Dyssodia tenuiloba (Candolle) Robinson	---	Nat	--	R	--	1
Emilia fosbergii Nicolson	Flora's paintbrush	Nat	R	--	--	4
Lactuca serriola L.	prickly lettuce	Nat	R	--	--	
Pluchia carolinensis (Jacq.) G. Don	sourbush	Nat	R	U	R	
Senecio cineraria A.P. de Candolle	dusty-Miller	Orn	--	R	--	
Sphagneticola trilobata (L.) Pruski	wedelia	Nat	U2	--	--	1
Tridax procumbens L.	coat buttons	Nat		U2	--	
BATACEAE						
Batis maritima L.	pickleweed	Nat	--	U3	R3	1
BIGNONIACEAE						
Spathodea campanulata P. Beauv.	African tulip	Nat	--	R	--	1
Tabebuia sp.	---	Orn	--	R	--	4
BORAGINACEAE						
Cordia subcordata Lam.	*kou*	**Pol**	R	U	R	
Heliotropium curassavicum L.	*kīpūkai*	**Ind**	--	U	U	
Tournefortia argentea L. fil.	tree heliotrope	Nat	--	O	C	
CACTACEAE						
Cereus uruguayanus R. Kiesling	hedge cactus	Nat	--	R1	--	1
Echinocactus grusonii Hildmann	golden-barrel cactus	Orn	--	R3	--	
CAPPARACEAE						
Capparis sandwichiana DC	*maiapilo*	**End**	--	R	--	1
Cleome gynandra L.	wild spider flower	Nat	R	O	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
CARICACEAE						
Carica papaya L.	papaya, pawpaw	Nat	R	R	--	1
CARYOPHYLLACEAE						
Dianthus caryophyllus L.	carnation	Orn	--	R	--	
CHENOPODIACEAE						
Beta vulgaris cicla (L.) W.D.J. Koch	chard	Orn	--	R	--	
Chenopodium murale L.	*ʻāheahea*	Nat	--	--	R	
CLUSIACEAE						
Calophyllum inophyllum L.	*kamani*	**Pol**	R1	--	--	1
Clusia rosea Jacq.	autograph tree, copey	Nat	R	--	--	1
COMBRETACEAE						
Conocarpus erectus L.	button mangrove	Nat	--	R	--	1
CONVOLVULACEAE						
Ipomoea batatas (L.) Lam.	*ʻuala*	Pol	--	R	--	1
Ipomoea cf. *obscura* (L.) Ker-Gawl	---	Nat	R	U	--	4
Ipomoea pes-caprae (L.) R. Br.	*pōhuehue*	**Ind**	--	R	O2	1
Ipomoea triloba L.	little bell	Nat	R	--	--	4
Jacquemontia ovalifolia (Choisy) H. Hallier	*pāʻū-o-Hiʻiaka*	**Ind**	--	R	--	1
CRASSULACEAE						
Bryophyllum pinnatum (Lam.) ʻOken	air plant	Nat	--	R	--	1
Sedum cf. *pachyphyllum* Rose	jellybean plant	Orn	--	R	--	
CUCURBITACEAE						
Cucurbita moschata L.	crookneck squash	Orn	--	R	--	
Sechium edule (N. Jacq.) Swartz	chayote	Orn	--	R	--	4
EUPHORBIACEAE						
Acalypha sp.		Orn	--	R	--	4
Aleurites moluccana (L.) Willd.	*kukui*	Pol	R	R	--	1
Chamaesyce albomarginata (Torr. & A. Gray) Small	rattlesnake plant	Nat	U2	U3	--	
Chamaesyce hirta (L.) Millsp.	garden spurge	Nat	C	A	U	2
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	Nat.	R	U1	--	
Chamaesyce hyssopifolia (L.) Small	---	Nat	--	R	--	
Codiaeum variegatum (L.) Blume	croton	Orn	R	U	--	
Euphorbia cotinifolia L.	red spurge	Orn	--	R	--	
Euphorbia cyathophora J.A. Murray	wild poinsettia	Nat	--	R	--	1
Euphorbia lacteal Haworth	mottled-candlestick tree	Orn	--	R	--	
Euphorbia milii des Moulins	crown-of-thorns	Orn	--	R2	--	
Euphorbia tirucalli L.	pencil tree	Nat	--	R	--	1
Jatropha gossypiifolia L.	cotton-leaved jatropha	Nat	--	R	--	1
Pedilanthus tithymaloides (L.) Poiteau	redbird-cactus (white sport)	Orn	--	R	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
Pedilanthus tithymaloides smallii (Milllsp.) Dressler	zigzag plant	Orn	--	R2	--	
Phyllanthus debilis Klein ex Willd.	niruri	Nat	U	R	--	
FABACEAE						
Acacia confusa Mers	Formosan *koa*	Nat	--	R	--	1
Acacia farnesiana (L.) Willd.	*klu*	Nat	--	O	R	
Bauhania monandra Kurz	St. Thomas tree	Orn	R1	R	--	
Caesalpinia pulcherrima (L.) Swartz	*'ohai ali'i*	Orn	--	R	--	
Chamaecrista nictitans (L.) Moench	partridge pea	Nat		U		
Delonix regia (Bojer ex Hook.) Raf.	royal poinciana	Nat	R	--	--	
Desmodium triflorum (L.) DC	---	Nat	U3	--	--	2
Indigofera hendicaphylla Jacq.	creeping indigo	Nat	--	C	U	2
Indigofera suffruticosa Mill.	indigo	Nat	--	R	--	
Leucaena leucocephala (Lam.) de Wit	*koa haole*	Nat	R	O	R	
Macroptilium atropurpureum (DC) Urb.	---	Nat	R	--	--	
Macroptilium lathyroides (L.) Urb.	cow pea	Nat.	R	--	--	
Mimosa pudica L.	sensitive plant	Nat	R	--	--	
Pithecellobium dulce (Roxb.) Benth.	*'opiuma*	Nat	--	R	--	
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth.	*kiawe*	Nat	--	O	--	
Samanea saman (Jacq.) Merr.	monkeypod, rain tree	Nat	O	C	--	1
Senna alata (L.) Roxb.	candle bush	Nat	--	R	--	1
GERANIACEAE						
Pelargonium x *hortorum* L. H. Bailey	common geranium	Orn	--	U	--	
GOODENIACEAE						
Scaevola taccada (Gaertn.) Roxb.	*naupaka kahakai*	**Ind**	O	C	C	
LAMIACEAE						
Lavandula spp.	lavender	Orn	--	R2	--	
Mentha x *spicata* L.	spearmint	Orn	--	R	--	
Ociuim spp.	basil	Orn	--	R2	--	
Rosmarinus officianalis L.	rosemary	Orn	--	R	--	
Salvia officinalis	sage	Orn	--	R	--	
Solenostemon scutellarioides (L.) Codd	coleus	Orn	--	R	--	
LYTHRACEAE						
Lagerstroemia indica L.	crepe-myrtle	Orn	--	R	--	4
MALVACEAE						
Abutilon grandifolium (Willd.) Sweet	hairy abutilon	Nat	R	--	--	4
Hibiscus clayi O. & I. Degener	Clay's hibiscus	**End**	--	R	--	1,3
Hibiscus rosa-sinensis L.	Chinese hibiscus & cult.	Orn	O	C	--	
Malva parviflora L.	cheese weed	Nat	--	R	--	
Malvastrum coromandelianum (L.) Garcke	false mallow	Nat	R	--	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
Malvaviscus penduliflorus A.P. de Cand.	Turk's-cap	Orn	--	R	--	
Sida ciliaris L.	---	**Nat**	--	R2	--	4
Thespesia populnea (L.) Sol. ex Corrêa	*milo*	**Ind**		U	R	
MORINGACEAE						
Moringa oleifera Lam.	horseradish tree	Orn	R	R1	--	
MORACEAE						
Ficus macrophylla Pers.	Moreton Bay fig	Orm	--	R	--	
Ficus microcarpa L. fil.	Chinese banyan	Nat	R	R	--	
MYOPORACEAE						
Myoporum sandwicense A. Gray	*naio* & *naio papa*	**Ind**	--	R1	--	1
NYCTAGINACEAE						
Boerhavia coccinea Mill.	false alena	Nat	U	A	C	
Bougainvillea spectabilis Wild.	bougainvillea	Orn	U	U	--	
ONAGRACEAE						
Oxalis corniculata L.	yellow wood sorrel	**Pol**	R	R	--	
PASSIFLORACEAE						
Passiflora suberosa L.	*huehue haole*	Nat	R	--	--	
PLANTAGINACEAE						
Plantago lanceolata L.	nrw-lvd plantain	Nat	--	U3	--	2
Plantago major L.	brd-lvd plantain	Nat	U3	--	--	2
PLUMBAGINIACEAE						
Plumbago auriculata Lam.	blue plumbago	Orn	--	R	--	
POLYGONACEAE						
Coccoloba uvifera (L.) L.	sea grape	Orn	R	R	--	1
PORTULACACEAE						
Portulaca grandiflora W.J. Hook.	moss-rose	Orn	--	R	--	
Portulaca oleracea L.	pig weed	Nat	R	U	--	
Portulaca pilosa L.	---	Nat	R	U	--	
Portulacaria afra (L.) N. Jacq.	minature jade plant	Orn	--	R	--	
Talinum fruticosum (L.) Juss.	---	Nat	R	U2	--	
ROSACEAE						
Rosa sp.	rose	Orn	--	R	--	
RUBIACEAE						
Gardenia taitensis A.P. Candolle	Tahitian gardenia	Orn				
Gardenia sp.	gardenia	Orn	--	R	--	4
Hedyotis corymbosa (L.) Lam.	--	Nat	U3	U3	--	2
Ixora sp.	ixora	Orn	R1	--	--	
Morinda citrifolia L.	*noni*	**Pol**	R	O	R	
Pentas lanceolata (Forsk.) Deflers	pentas	Orn	--	R	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
SAPINDACEAE						
Filicium decipiens (R. Wight & Arnott) Thwaites	fern tree	Nat	--	R	--	1
SCROPHULARIACEAE						
Bacopa monnieri (L.) Pennell	*ʻae*ʻ*ae*	**Ind**	--	R	--	1
SOLANACEAE						
Brugmansia x *candida* Persoon	Angel's trumpet	Orn	--	R	--	
Capsicum spp.	peppers, chili pepper	Orn	--	R1	--	
Solanum americanum Mill.	*pōpolo*	**Ind**	--	R	--	
Solanum melongena L.	eggplant	Orn	--	R	--	
STERCULIACEAE						
Waltheria indica L.	*ʻuhaloa*	Nat	R	A	C	
STRELITZIACEAE						
Ravenala madagascariensis Sonn.	traveler's tree	Orn	--	R	--	
Solanum americanum Mill.	*pōpolo*	**Ind**	--	R	--	
TURNERACEAE						
Turnera ulmifolia L.	yellow alder	Nat	U	U	--	1
RUTACEAE						
Citrus aurantiifolia (Christm.) Swingle	Mexican lime cult.	Orn	R	--	--	
VERBENACEAE						
Duranta erecta L.	golden dewdrop	Orn	--	R	--	
Lantana camara L.	lantana	Nat	--	U	--	1
Phyla sp.	---	Orn	--	R	--	
Vitex rotundifolia L. Fil.	*pōhinahina*	**Ind**	--	R3	--	1
Vitex trifolia L.	blue vitex	Orn	--	R	--	
ZYGOPHYLLACEAE						
Tribulus cf. *terrestris L.*	caltrop (or *nohu*)	Nat	--	R	R	4
	FLOWERING PLANTS					
	MONOCOTYLEDONES					
AGAVACEAE						
Cordyline fruticosa (L.) A. Chevalier	ti, *ki*	Pol	--	U	--	1
Dracaena fragrans (L.) Ker Gawl.	fragrant dracaena	Orn	--	U	--	
Dracaena sanderiana M.T. Masters	sanderiana	Orn	--	R1	--	
Nolina recurvata (Lemaire) W. Hemsley	ponytail	Orn	--	R	--	
Sansevaria trifasciata Prain	bowstring-hemp	Orn	R	R	--	
Sansevaria trifasciata 'Golden Hahnii'	dwarf cult.	Orn	--	R	--	
ALOEACEAE						
Aloë vera (L.) N.L. Burm.	aloe vera	Orn	R	U	--	
ARACEAE						
Dieffenbachia maculata (Loddiges) G. Don	dumb cane	Orn	--	R	--	
Monstera delicosa Liebm.	monstera	Orn	--	R	--	

Species listed by family	*Common name*	ST	Abundance			NT
			DE	DI	CS	
Philodendron spp.	philodendron vines	Orn	--	R	--	
ARECACEAE						
Caryota sp.	fishtail palm	Orn	--	R	--	
Cocos nucifera L.	*niu*, coconut	**Pol**	U	O	U	1
Dypsis lutescens (H. Wendl.) Beentje & J. Dransfield	golden-fruited palm	Orn	R1	R	--	
Hyophorbe cf. *lagenicaulis* (L.H. Bailey) H.E. Moore	bottle palm	Orn	--	R	--	
Licuala cf. *grandis* H. Wendl.	licuala palm	Orn	--	R	--	
Livistona chinensis (N. Jacq.) Martius	Chinese fan palm	Orn	--	R	--	
Phoenix sp.	date palm	Nat	--	R	R	
Pritchardia cf. *thurstonii* F. Muell. & Drude	Fiji fan palm	Orn	--	R	--	
Pritchardia sp.	---	Orn	--	R	--	1,4
Ptychosperma macarthurii (Veitch) J.D. Hook.	Macarthur palm	Orn	R	R	--	
Veitchia merrilli (Beccari) H.E. Moore	Manila palm	Orn	--	R	--	
BROMELIACEAE						
Ananas comosus L.	pineapple	Orn	--	R	--	
Neoregelia carolinae (Beer) L.B. Smith	blushing bromeliad	Orn	--	R3	--	
Neoregelia spp. and crosses	---	Orn	--	R3	--	4
CANNACEAE						
Canna x *generalis* L. H. Bailey	garden canna	Orn	--	R2	--	
COMMELINACEAE						
Commelina benghalensis L.	hairy *honohono*	Nat	R2	--	--	
Tradescantia spathacea Swartz	moses-in-the-cradle	Orn	R1	R2	--	
COSTACEAE						
Costus sp.	---	Orn	R	R	--	4
CYCLANTHACEAE						
Carludovica palmata Ruiz & Pavón.	Panama-hat plant	Orn	--	R	--	
CYPERACEAE						
Cyperus polystachyos Rottb.	---	**Ind**	R2	R	--	
Fimbristylis cymosa spathacea (Roth) T. Koyama	---	**Ind**	--	--	R2	
Fimbristylis dichotoma (L.) Vahl	---	**Ind**				2
Kyllinga brevifolia Rottb.	*kili‘op‘opu*	Nat	A	C	--	2
Kyllinga nemoralis (J.R. & G. Forster) Dandy ex Hutchinson & Dalziel	*kili‘op‘opu*	Nat	R	--	--	
HELICONIACEAE						
Heliconia psittacorum L. fil. x *H. spathocircinata* Aristeg.	parrot heliconia	Orn	--	R	--	
IRIDACEAE						
Neomarica sp.	marica	Orn	--	R	--	

Species listed by family	***Common name***	**ST**	**Abundance**			**NT**
			DE	DI	CS	
LILIACEAE						
Agapanthuis praecox orientalis (F.M. Leighton) F.M. Leighton	African lily	Orn	--	R2	--	
Allium spp.	onion, chives	Orn	--	R3	--	
Dianella sandwicensis Hook. & Arnott	*'uki'uki*	**Ind**	--	R	--	1
Hymenocallis sp.	spider lily	Orn	--	R	--	
Ophiopogon japoniucus (L. fil.) Ker Gawl.	mondo grass	Orn	R2	--	--	
MUSACEAE						
Musa hybid	banana	Orn	R	R	--	
ORCHIDACEAE						
Cattleya sp.	---	Orn	--	R	--	
PANDANACEAE						
Pandanus tectorius S. Parkinson ex Z	*hala*	**Ind**	R	R	R	1
POACEAE						
Axonopus compressus (Sw.) P. Beauv.	carpet-grass	Nat	A3	O3	--	1,2
Axonopus fissifolius (Raddi) Kuhlm.	carpet-grass	Nat	C3	O2	--	2
Bothriochloa pertusa (L.) A. Camus	pitted beardgrass	Nat	U3	--	--	1,2
Cenchrus echinatus L.	common sandbur	Nat	R	R	--	
Chloris barbata (L.) Sw.	swollen fingergrass	Nat	R	U	R	
Cymbopogon citratus (C. Nees) Stapf	lemon grass	Orn	--	R	--	
Cynodon dactylon (L.) Pers.	Bermuda grass	Nat	C3	O3	O3	1,2
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult.	lovegrass	Nat	R1	--	--	1,2
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	Nat	C3	--	--	1,2
Eleusine indica (L.) Gaertn.	wiregrass	Nat	A	C	U	1,2
Eremochloa ophiuroides (Minro) Hackel	centipede grass	Orn	--	R2	--	
Melinus repens (Willd.) Zizka	Natal redtop	Nat	R	R	--	
Pennisetum setaceum (Forssk.) Chiov.	fountain grass	Nat	R	AA	U	
Saccharum officinarum L.	*ko*, sugar cane	**Pol**	--	R	--	1
Sporobolis virginicus (L.) Kunth	*'aki'aki*	**Ind**	--	--	AA	
Sporobolus cf. indicus (L.) R.Br.	West Indian dropseed	Nat			O2	
Sporobolis sp.	dropseed, smutgrass	Nat	O			
Urochloa maxima (Jacq.) Webster	Guinea grass	Nat	R	R	--	

Legend to Table 1

ST -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.

Pol. = Polynesian introduction before 1778.

ABUNDANCE = occurrence ratings for plants by 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 species for vegetation type.

Numbers following an occurrence rating indicate clusters within the survey area. The ratings above provide an estimate of the likelihood of encountering a species within the specified survey area; numbers modify this where abundance, tends to be greater than the occurrence rating:

1 – several plants present
2 - many plants present
3 – locally abundant

Areas are: DEV = landscaped sports complex area; DIS = mostly highly disturbed areas of variable maintenance (old runway, community gardens, beach parks); and CST = the coastal strand.

NT - NOTES: (1) - Although a native species, present as a planted ornamental in the park (esp. public garden area).
(2) - Found here typically as a component of or weed in lawns.
(3) - A federally listed species (threatened or endangered).
(4) - Specimen(s) observed lacked a key feature (flower, fruit, etc.) needed for positive identification.

The undeveloped lands at the extreme north end of the property are included in the disturbed areas accounting as this area has been disturbed, although not in recent decades. The vegetation here is mostly fountain grass (*Pennisetum purpureum*) with scattered *kiawe* (*Prosopis pallida*) and *klu* (*Aciacia farnesiana*). Abundant here as well is shrubby *koa haole* (*Leucaena leucocephala*) and ‘*uhaloa* (*Waltheria indica*). A single specimen of the native endemic, *maiapilo* (*Capperis sandwichiana*), was observed in the north corner of the property. This plant is relatively common on the neighboring Queen Emma Estate parcel, and several specimens are being grown in the community garden area.

Areas of undisturbed strand vegetation occur at the north and south ends of the park, with scattered areas between having various levels of disturbance dependent upon beach use, water access, etc. The vegetation typical of this area is mostly native and includes *‘aki‘aki* (*Sporobolis virginicus*), tree heliotrope (*Tournefortia argentea*; non-native), *naupaka* (*Scaevola taccada*), *pōhuehue* (*Ipomoea pes-caprae*), and *‘akulikuli* (*Sesuvium portulacastrum*). The transition to the disturbed areas inland supports tree heliotriope and *naupaka*, with coconut palms (*Cocos nucifera*; many recently planted), Bermuda grass (*Cynodon dactylon*), ‘*uhaloa*, and false alena (*Boerhavia coccinea*) common to abundant. Depressed areas are covered with pickleweed (*Batis maritima*), an indication of occasional flooding.

As noted, two areas are highly maintained and regularly watered, thus supporting a wide range of plantings (mostly ornamentals): 1) the Maka’eo Jogging Path and associated lawn and community gardens, and 2) the lawns and playing fields of the sports complex at the south end of the site. A wide variety of ornamental trees have been planted in these areas, including monkeypod (*Samanea saman*), St. Thomas tree (*Bauhania monandra*), Cook pine (*Araucaria columnaris*), *kamani* (*Calophyllum inophyllum*), *kou* (*Cordia subcordata*), frangipani (*Plumeria rubra* cultivars, mostly), among many others. Commonly planted around buildings and other structures are various cultivars of Chinese hibiscus (*Hibiscus rosa-sinensis* cultivars), gardenia (*Gardenia taitensis* and *G*. sp.), croton (*Codiaeum variegatum*), and other shrubs, as well as several palms: golden-fruited palm (*Dypsis lutescens*), Macarthur palm (*Ptychosperma macarthurii*), coconut palm, etc.

Avian Survey Methods

Ten avian count stations were sited approximately 300-meter apart along two transects that ran from north-to-south within the vegetated areas on either side of the runway. Eight-minute point counts were made at each of the 10 count stations. Each station was counted once. Field observations were made with the aid of Leitz 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated between 06:30 a.m. and 10:00 a.m., the peak of daily bird activity. Additionally, the zoologist walked the site in a similar fashion as the botanist, to ensure that no additional species or habitats not encountered during the time dependant avian counts were present on the site.

Avian Survey Results

A total of 742 individual birds of 18 different species, representing 13 separate families, were recorded during station counts (Table 2). Two of the species recorded, Pacific Golden-Plover (*Pluvialis fulva*), and Ruddy Turnstone (*Arenaria interpres*) are native species. Both of these species are indigenous migratory shorebird species that 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 for their trip back to the Arctic in late April or the very early part of May each year. The remaining 16 avian species detected are all considered to be alien to the Hawaiian Islands. No avian species currently listed, or proposed for listing under either the federal or State of Hawaii endangered species statutes was detected during the course of this survey.

Avian diversity and densities were in keeping with the habitat present within the project area and its location. Three species: Zebra Dove (*Geopelia striata*), Saffron Finch (*Sicalis flaveola*), and House Sparrow (*Passer domesticus*), accounted for slightly less than 56 percent of the total number of birds detected. The most common avian species recorded was Zebra Dove, which accounted for slightly less than 30 percent of the total number of individual birds recorded. An average of 74 individual birds was recorded per station count.

Table 2 – Avian Species Detected Within the Kailua Park Project Site			
Common Name	***Scientific Name***	***ST***	***RA***
	GALLIFORMES		
	PHASIANIDAE - Pheasants & Partridges		
	Phasianinae - Pheasants & Allies		
Gray Francolin	*Francolinus pondicerianus*	A	0.30
	CHARADRIIFORMES		
	CHARADRIIDAE - Lapwings & Plovers		
	Charadriinae - Plovers		
Pacific Golden-Plover	*Pluvialis fulva*	IM	1.90
	SCOLOPACIDAE - Sandpipers, Phalaropes & Allies		
	Scolopacinae - Sandpipers & Allies		
Ruddy Turnstone	*Arenaria interpres*	IM	3.10
	COLUMBIFORMES		
	COLUMBIDAE - Pigeons & Doves		
Spotted Dove	*Streptopelia chinensis*	A	3.90
Zebra Dove	*Geopelia striata*	A	22.20
	PSITTACIFORMES		
	PSITTACIDAE - Lories Parakeets, Macaws & Parrots		
	Arinae - New World Parakeets, Macaws & Parrots		
Mitred Parakeet	*Aratinga mitrata*	A	0.70
	PASSERIFORMES		
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	1.00
	MIMIDAE - Mockingbirds & Thrashers		
Northern Mockingbird	*Mimus polyglottos*	A	0.50
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	6.90
	EMBERIZIDAE - Emberizids		
Saffron Finch	*Sicalis flaveola*	A	10.00
Yellow-billed Cardinal	*Paroaria capitata*	A	0.40
	CARDINALIDAE - Cardinals & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	0.80
	FRINGILLIDAE - Fringilline and Carduleline Finches & Allies		
	Carduelinae - Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	5.80
Yellow-fronted Canary	*Serinus mozambicus*	A	0.30
	PASSERIDAE - Old World Sparrows		
House Sparrow	*Passer domesticus*	A	9.10

Table 2 continued

Common Name	*Scientific Name*	*ST*	*RA*
	ESTRILDIDAE - Estrildid Finches		
	Estrildinae - Estrildine Finches		
African Silverbill	*Lonchura cantans*	A	0.30
Nutmeg Mannikin	*Lonchura punctulata*	A	1.60
Java Sparrow	*Padda oryzivora*	A	5.40

KEY TO TABLE 1

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

IM Indigenous Migratory Species – Native to Hawai‘i, but also found elsewhere naturally, does not nest in Hawai‘i

RA Relative Abundance - Number of birds detected divided by the number of count stations (10)

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lazarus cinereus semotus*), or *‘ōpe‘ape‘a* as it is known locally, all terrestrial mammals currently found on the Island of Hawai‘i are alien species. Most are ubiquitous. The 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 vertebrate species observed and heard within the project area.

Mammalian Survey Results

A total of four mammalian species were detected during the course of this survey. Numerous cats (*Felis c. catus*) were seen within the site, usually close to cat feeding stations located within the site. A total of 10 small Indian mongooses (*Herpestes a. auropunctatus*) were seen, usually associated with the cat feeding stations or in close proximity to the trash cans. Additionally numerous dogs (*Canis f. familiaris*) were observed, most being walked by humans (*Homo sapiens*).

Discussion

Botanical Resources

Most of the site is highly disturbed from a natural vegetation perspective; only the coastal strand provides a glimpse of what the vegetation would have been like several centuries ago (Figure 7). Only two native endemics of note were recorded: *maiapilo* or Hawaiian caper and *Hibiscus clayi*. *Capparis sandwichiana* is becoming rather rare in the islands, and the lowland slopes north of Kailua-Kona town constitute one area where the plant is relatively common. One specimen was found at the north end of the park property, but several are being grown to large size in the community garden area. *Hibiscus clayi* is listed as an endangered species (USFWS, 1994, 2009).

This location would not support *H. clayi* (a species native to eastern Kauai's) were it not for the regular care and watering that these specimens receive in the community garden.

The coastal strand at the north end of the project area (shown in Figure 4) and at the south end of the beach park section supports a mostly native assemblage of plants. The latter area (shown in Figure 7) is particularly weed free and the native grass appears exceptionally robust considering the time of year, suggesting this area may be receiving some care.

Figure 7. Extensive growth of *'aki'aki* on dune sand at southern end of beach park section; trees in the background are tree heliotrope.

Avian Resources

The findings of this survey are consistent with the habitat present on the site, and it's coastal location. The findings are also consistent with the results of several other avian surveys conducted in the Kailua, Kona in the recent past (David 2000a, 2000b, 2000c, 2000d, 2001, 2003, 2004a, 2004b, 2005, 2006a, 2006b, 2006c, 2007, 2008, 2009a, 2009b, 2009c, David and Guinther 2006, David et al., 2008, Guinther et al., 2005, 2009).

During the course of this survey a total of 18 avian species were recorded during the time spent within the project area (Table 2). Two of the species recorded, Pacific Golden-Plover and Ruddy

Turnstone are native species. Both of these species are indigenous migratory shorebird species that nest 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 for their trip back to the Arctic in late April or the very early part of May each year. The remaining 16 avian species detected are considered to be alien to the Hawaiian Islands (Table 2). Avian diversity and densities were in keeping with the habitat present within the project area, and its location. No species currently listed, or proposed for listing under either the federal or the State of Hawai‘i endangered species programs were detected during the course of this survey.

Although not detected during this survey, it is possible that small numbers of the endangered endemic Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened Newell's Shearwater (*Puffins auriculars newelli*), over-fly the project area between the months of May and November (Banko 1980a, 1980b, Harrison 1990, Day et al. 2003a). Recent surveys using ornithological radar have recorded these species flying inland along the Kona coast (Day et al. 2003a). There is no suitable nesting habitat within or close to the proposed project site for either of these pelagic seabird species.

Hawaiian Petrels were formerly common on the Island of Hawai‘i (Wilson and Evans 1890–1899). This pelagic seabird reportedly nested in large numbers on the slopes of Mauna Loa and in the saddle area between Mauna Loa and Mauna Kea (Henshaw 1902), as well as at the mid-to-high elevations of Mount Hualālai. It has, within recent historic times, been reduced to relict breeding colonies located at high elevations on Mauna Loa and, possibly, Mount Hualālai (Banko 1980a, Banko et al. 2001, Cooper and David 1995, Cooper et al. 1995, Day et al. 2003a, Harrison 1990, Simons and Hodges 1998). Hawaiian Petrels were first listed as an endangered species by the USFWS in 1967 and by the State of Hawai‘i in 1973 (Federal Register 1967, DLNR 1998)

Newell's Shearwaters were formerly common on the Island of Hawai‘i (Wilson and Evans 1890–1899). This species breeds on Kaua‘i, Hawai‘i, and Moloka‘i. Newell's Shearwater populations have dropped precipitously since the 1880s (Banko 1980b, Day et al., 2003b). This pelagic species nests high in the mountains in burrows excavated under thick vegetation, especially *uluhe* (*Dicranopteris linearis*) fern. Newell's Shearwater was listed as a threatened species by the USFWS in 1975 and by the State of Hawai‘i in 1973 (Federal Register 1975, DLNR 1998).

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

Mammalian Resources

The findings of this survey are consistent with the habitat present on the site, and its location on the Big Island at the coast. The findings are also consistent with the results of several other avian surveys conducted in the Kailua, Kona in the recent past (David 2000a, 2000b, 2000c, 2000d, 2001, 2003, 2004a, 2004b, 2005, 2006a, 2006b, 2006c, 2007, 2008, 2009a, 2009b, 2009c, David and Guinther 2006, David et al., 2008, Guinther et al., 2005, 2009).

Although not detected during the course of this survey, it is probable that Hawaiian hoary bats use resources within the Park on a seasonal basis, as bats have been documented in the general Kailua Kona area on a seasonal basis (David 1990, 2009c, Jacobs 1994).

Although no rodents were detected during the course of this survey it is probable that the four established alien rodents known from the Island of Hawai‘i, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), and European house mice (*Mus musculus domesticus*), use resources within the project site on occasion.

All of the other mammalian species recorded during the course of this survey are commonly occurring species in the urban and park settings in Kona. All of the quadrupeds recorded are considered to be alien to the Hawaiian Islands, and none are protected under either state or the federal endangered species statutes.

Stream and Wetland Resources

This area is too dry and the ground too porous (geologically recent lava flows and soil mostly derived from wind-blown beach sand) to support streams. However, the low elevation in proximity to the coast sets up an opportunity for the formation of brackish pools at essentially sea level. Pools isolated from the sea (that is, lacking an overland connection) and having water with measurable salinity and showing tidal action are termed *anchialine*, comprising a special habitat type protected by state and federal statutes. Three areas on the subject property have potential to be defined as anchialine and/or possibly as jurisdictional wetlands. The first is a pond at the far north end at the edge of a large boulder dump. The pool here is on the order of 6 by 12 feet (2 by 3 meter) and roughly 2 feet (0.8 meter) deep. We were not equipped to sample salinity, but the pool harbored populations of a small *poeciliid* (perhaps a molly) and a shrimp characteristic of anchialine ponds called *‘ōpae‘ula* (*Halocaridina rubra*). This pond is heavily shaded by several *kiawe* trees and surrounded by a thick growth of *‘akulikuli*.

A second feature is a small pool in the community garden area. This pool is only about 1.5 m in diameter and less than 0.25 m deep. The pool occupies a natural basin in the *pāhoehoe* surface and thought not to be anchialine; it may be a natural, impermeable basin fed by water from a hose. The pool supports a dense population of *poeciliids* (mostly guppies) that crowd at the surface when approached, indicating the fish are being fed.

A couple of areas support dense growth of pickleweed or *‘akuluikuli kai* (*Batis maritima*). It is difficult to determine what the source of water may be for these areas; they were dry when

inspected on October 21. However, pickleweed is regarded as an obligate, wetland plant in Hawai‘i. Therefore, an area with hydrology (a water source) dominated by pickleweed, has the potential for being classified as a wetland under federal jurisdiction. One area wedged between the runway and the low coastal dunes is probably a depression that floods on occasion, or may have saline groundwater close to the surface. Pickleweed grows in areas of saline soils and sediments, including coastal fishponds and anchialine features.

Potential Impacts to Protected Species

The redevelopment and expansion of the Park facilities is not expected to result in deleterious impacts to any botanical, avian or mammalian species currently listed or proposed for listing under either the federal or state of Hawaii endangered species statutes.

Botanical Resources

The only protected species (*Hibiscus clayi*) found during the course of this survey is located in the community garden where several specimens have been planted as ornamentals in a garden focused on native plants (Figure 6). This is a Kaua‘i Island endemic and is not known from the Island of Hawai‘i in any setting other than gardens. As there are no plans to remove the garden, but rather plans to further enhance it, this action is not likely to impact this listed ornamental planting.

Hawaiian Petrel and Newell's Shearwater

The principal potential impact that construction and operation of the proposed Park facilities poses to Hawaiian Petrels and Newell's Shearwaters is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct nighttime construction activities, 2) following build-out the potential operation of streetlights and athletic field lighting.

Hawaiian Hoary Bat

As previously discussed, it is possible that Hawaiian hoary bats over-fly portions of the site on a seasonal basis. They may also forage for volant insects that are attracted to the athletic field lighting on a seasonal basis. It is not currently known if any individual bats roost within the Park.

The principal potential impact that the development Kailua Park poses to bats is during the clearing and grubbing phases of construction as vegetation is removed. The removal of vegetation within the project site may temporarily displace individual bats, which may use the vegetation as roosting locations. As bats use multiple roosts within their home territories the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season female carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally adult female bats sometimes leave their pups in the roost tree while they themselves forage. Very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing

woody vegetation that is 4.5 meters (15 feet) or taller during the pupping season, which currently is considered to run between April 15 and August 15.

Recommendations

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

If streetlights or facility lighting is installed in conjunction with the Park, it is recommended that lights be shielded to reduce the potential for interactions of nocturnally flying Hawaiian Petrels and Newell's Shearwaters with external lights and man-made structures (Reed et al. 1985, Telfer et al. 1987). This minimization measure would serve the dual purpose of minimizing the threat of disorientation and downing of Hawaiian Petrels and Newell's Shearwaters, while at the same time complying with the Hawaii County Code § 14 – 50 *et seq.* which requires the shielding of exterior lights so as to lower the ambient glare caused by unshielded lighting to the astronomical observatories located on Mauna Kea.

The existing athletic field lighting is a mix of shielded and unshielded lights. It is recommended that any existing unshielded athletic field lights be replaced with shielded lights or retrofitted with shields, and that any new athletic field lighting be shielded.

To remove the potential the clearing and grubbing of vegetation during the construction phases of the project do not result in deleterious impacts to roosting bats that may be tending young it is recommended that woody vegetation that is 4.5 meters (15 feet) or taller not be cleared between April 15 and August 15, which is when are most vulnerable to roost site clearing.

The anchialine feature at the north end of the park must be preserved and could be enhanced by removal of the *poeciliid* fish and removal of the *kiawe* trees. Since this area is not proposed for modification, further effort need not be expended. However, the adjacent massive boulder field is unstable and potentially dangerous to hikers and clearly inappropriate in a park setting. The boulders should be removed or stabilized in place.

Potential wetland/anchialine areas marked by a growth of pickleweed may need to be investigated further if plans call for alteration of the landscape in these areas. As a general rule, removal of the pickleweed would be a benefit, as this plant is regarded as an aggressive invasive. Problems could arise with respect to Clean Water Act violations if fill were to be placed in the areas of pickleweed prior to determination of the need for a Department of the Army permit for fill in wetlands.

Glossary:

Alien – Introduced to Hawai‘i by humans
Anchialine - A land locked body of water with a subterranean connection to the ocean
Commensal - Animals that share humans’ food and shelter, such as rats and mice
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended as an endangered species.
Hālau – A school, academy, group or club, in this instance a canoe club
Hale – House or building
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Mauka – Upslope, towards the mountains
*Maka*i – Down-slope, towards the ocean
Nocturnal – Night-time, after dark
‘Ōpae‘ula – Hawaiian native anchialine shrimp
‘Ōpe‘ape‘a – Hawaiian hoary bat
Pāhoehoe – Sheet lava formed by relatively fast moving lava flows
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are arranged by
Poeciliid – Family of fresh-water fish, which are live bearing. The order includes well known aquarium fish such as guppy, molly and swordtails
Sign – Biological term referring tracks, scat, rubbing, odor, marks, nests, and other signs created by animals by which their presence may be detected
Threatened – Listed and protected under the ESA as a threatened species
Volant – Flying, capable of flight, as in flying insect
Xeric - Extremely dry conditions or habitat

ASL – Above mean sea level
DLNR – Hawaii State Department of Land & Natural Resources
TMK – Tax Map Key
USFWS – United State Fish & Wildlife Service

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT

KAILUA PARK
75-5530 KUAKINI HIGHWAY
KAILUA -KONA, HAWAI'I 96816

TMKS:
(3) 7-5-005: PARCEL 007
(3) 7-5-005: PARCEL 083

Prepared For:
County of Hawai'i
Parks & Recreation
101 Pauahi Street, Suite 6
Hilo, Hawai'i 96720

Prepared By:
KIMURA INTERNATIONAL, INC.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, HI 96814

July 2009

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Appendices

ACRONYMS

AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
CESQG	Conditionally Exempt Small Quantities Generator
CORRACTS	TSD facility subject to Corrective Action under RCRA
DLNR	Hawai‘i State Department of Land and Natural Resources
EDR	Environmental Data Resources, Inc.
EPA/USEPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FINDS	Facility Index System/Facility Identification Initiative Program Summary Report
FTTS INSP	Federal Insecticide, Fungicide, and Rodenticide Act/TSCA
HDOH	Hawai‘i Department of Health
HECO	Hawaiian Electric Company
HWS	State Hazardous Waste Sites
HEER	HDOH, Hazard Evaluation and Emergency Response Office
HMS	Hazardous Materials Survey
LUST	Leaking Underground Storage Tank
LUST	HDOH Leaking Underground Storage Tank Database
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NGPC	Notice of General Permit Coverage
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
PADS	PCB Activity Database System
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery (RCRA) Information System
SARA	Superfund Amendments and Reauthorization Act
SHWB	HDOH, Solid and Hazardous Waste Branch
SHWS	State Hazardous Waste Sites List
SPILLS	HDOH HEER Office State Spills List
TMK	tax map key
TPH	total petroleum hydrocarbons
TSD	treatment, storage and disposal
USDA	United States Department of Agriculture
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UST	HDOH Registered Underground Storage Tanks Database

1.0 CERTIFICATIONS AND LIMITATIONS

The findings and conclusions presented in this report are professional opinions based solely upon limited visual observations of the property and vicinity, the interpretation of historical information and documents available, and interviews with representatives of the current landowner. This report is intended for the use of the County of Hawai‘i (COH), exclusively for the property indicated.

Kimura International makes no guarantee or warranty; either expressed or implied, except that our services are consistent with good commercial or customary practices designed to conform to acceptable industry standards. This Phase I ESA was prepared in accordance with the scope and limitations of ASTM Practice E1527-05 for TMKs (3) 7-5-005: Parcel 007 and (3) 7-5-005: Parcel 083. Any exceptions to, or deletions from, this practice are described within the Executive Summary and body of this report.

It is impossible to dismiss absolutely the possibility that parts of the site, or adjacent properties, may be adversely impacted by recognized environmental conditions. There is always a possibility that undisclosed contamination may exist from the improper handling or disposal of hazardous substances or petroleum products at the property. No warranty or representation, either expressed or implied, is included or intended in its proposal, contracts or reports.

Opinions presented in this report apply only to the property as outlined and represents the conditions present at the time of our investigation; they cannot account for site changes that may occur after the completion of the site inspection.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Brandis Ueyama
Environmental Scientist
Kimura International, Inc.

21 July 2009
Date

2.0 EXECUTIVE SUMMARY

This report presents the results of Kimura International's (KI) Phase I Environmental Site Assessment (Phase I ESA), performed in conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Practice E1527-05.

The following summarizes the independent conclusions representing Kimura International's best professional judgment based on available information. Information regarding operational conditions provided by the client or their representatives has been assumed to be correct and complete. The conclusions presented are based on the conditions that existed at the time of the assessment.

The subject property ("site"), referred to as the Kailua Park, is identified by TMKs: (3) 7-5-005: Parcel 007 and (3) 7-5-005: Parcel 083. The site is located in Kailua-Kona, Hawai'i, on the island of Hawai'i (Appendix A, Figure 1), at an elevation of approximately thirteen (13) feet above mean sea level (msl). A map of the TMKs is provided as Appendix A, Figure 2. The property encompasses approximately 117 acres of land and is currently used as a recreational park. Facilities include a swimming pool, gymnasium, tennis courts, basketball courts, sports fields, an in-line skating rink, a skateboarding park, an events pavilion, canoe club storage, facilities maintenance storage, children's play equipment, parking lots, a beach park, a walking path, and undeveloped land.

On March 31, 2009, KI performed a site reconnaissance to identify the use, storage, generation, and/or disposal of potentially hazardous materials and petroleum products. KI observed various chemicals and solvents related to the everyday maintenance and use of the property being stored on-site. In addition, two (2) 55-gallon drums of acetone were located in the canoe halau portion of the old terminal building. The acetone was being used by members of the halau for canoe finishing and maintenance. At the time of the survey, these drums were not labeled and were not being stored according to Occupational Safety and Health Administration (OSHA) standards. An old, rusted 55-gallon drum in poor condition was also observed adjacent to the horseshoe pit shelter. It was unlabeled, and its contents unknown. However, there were no indications of gross staining, stressed vegetation or olfactory observations to indicate that any of the chemicals or solvents has contaminated the site.

A visual inspection for hydraulic and electrical equipment, or electrical components, that use fluid that may contain polychlorinated biphenyls (PCB) was also conducted. Thirteen (13) utility pole-mounted and two (2) vault electrical transformers were observed on-site. An inquiry with Hawaiian Electric Light Company disclosed that eight of the thirteen pole-mounted transformers did not have testing information and must therefore be considered to contain PCBs. The transformers were in good condition and according to HELCO, did not have any history of leaks. The two vault transformers were found to be "PCB-free."

The site reconnaissance did not reveal any signs of illegal dumping of hazardous materials. However, on the northwest end of the old airport runway, an empty quart bottle of motor oil was found next to an oil stain, suggesting that someone in the general public may have performed an

illegal oil change on a personal vehicle on County property. The minimal size of the oil stain and the fact that no other stains were found suggests that the spill was most likely an isolated incident and therefore is not an environmental concern.

KI also noted that a number of telephone poles have been used as a landscaping element to provide a border around the area leased to two canoe halau by the state. Based on a visual inspection of the telephone poles, it is highly possible that they had been treated with creosote. Creosote is a thick, oily liquid derived from coal tar, to help preserve the wood. Creosote has been listed as a probable human carcinogen by the International Agency for Research on Cancer (IARC). There has been some concern of the affects of creosote treated telephone poles on the environment, as creosote may leach from the wood and into groundwater over time. As a result, its use is slowly being phased out. The poles have been painted with green paint which prevents the creosote from leaching into the soil below.

A number of wooden structures and components were present on site at the time of the survey. Much of this wood, if used in a location where they would be exposed to the elements, may have been treated with chromated copper arsenate (CCA). The arsenic component of CCA is of primary concern, and it appears on OSHA's Hazard Communications list. While unlikely, it has been shown that CCA can leach from treated lumber that is not sealed or protected. However, there are **no** regulations in place that require the removal of treated lumber from existing structures. The Environmental Protection Agency (EPA) does recommend that treated lumber be sealed and maintained to prevent possible leaching of CCA out of the wood and into the environment.

A visual lead paint and asbestos survey was conducted on the structures located on-site. Samples for laboratory analysis were **not** taken and given the age of the structures, certain building materials could possibly contain lead and/or asbestos containing materials. Suspect asbestos containing building materials identified are mastics, grouting, pipe insulation, vinyl floor tiles, drywall, joint compound, window/door caulking, roofing materials, siding weatherproofing, Galbestos roofing and Transite piping. All painted surfaces and their underlying layers could be lead-containing. The structures featuring these components are discussed in Section 6 of this document. However, at the time of the survey, **none of these suspect asbestos or lead containing materials were in a condition that would be cause for environmental or human health concern.**

KI reviewed local, state, and federal agency lists and available records to determine if the site and the surrounding properties have any history of hazardous waste generation, contamination, or any general environmental concerns. The site was **not** listed on any of the available state or federal environmental databases reviewed. Additionally, the contracted database search did not identify any properties adjacent to the site, within the recommended search radius, on any federal lists or databases. There were no State Landfills or Solid Waste Disposal Sites within a 1-mile radius, no State Hazardous Waste Sites (SHWS) listed within a 0.5-mile radius, and no registered Underground Storage Tanks (UST) within a 0.25-mile radius of the subject property. One (1) Leaking Underground Storage Tank (LUST) site was found within a 0.5-mile radius of the site:

The *Kona Radio Staion/Baseyard* was found to have two cases of "Confirmed Releases" from a LUST. In both cases site cleanup has been completed and "No Further Action" (NFA) was issued by the State of Hawaii Department of Health (HDOH). Based on the facility's status of NFA, as well as its location downgradient (lower) from the subject property, KI believes that the LUST does not pose any environmental concerns to Kailua Park.

A 1000-gallon above ground storage tank filled with propane is present on the property. Used for pool operations, the tank was in good condition and properly labeled at the time of the survey.

FINAL RECOMMENDATIONS

Kimura International has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 for TMKs (3) 7-5-005: Parcel 007 and Parcel 083. Kimura International did not find evidence of gross contamination or illegal dumping of hazardous materials anywhere on site. Based upon this fact, as well as a historical records review, it is Kimura International's opinion that a Phase II assessment is **not** warranted at this time.

However, Kimura International would like to offer the following recommendations for proactive environmental health and safety measures:

- The two 55-gallon drums of acetone in the canoe halau should be properly labeled and stored according to OSHA regulations (29 CFR §1910.106)

- The 55-gallon drum of unknown contents at the horseshoe pit should either be properly labeled and safely stored as required by their contents or removed from the premises.

- The telephone poles used as a border around the canoe halaus should be regularly inspected to ensure the creosote does not impact the soil.

- Wooden structures that may have been constructed with treated wood should be regularly inspected and maintained to reduce the risk of arsenic exposure to members of the public.

- If buildings on site are to be renovated or demolished, a comprehensive survey should be conducted to identify, quantitatively, all building materials containing asbestos, lead paint, arsenic, PCBs and other hazardous materials to ensure proper handling and disposal.

3.0 INTRODUCTION

Kimura International has completed a Phase I ESA of the property referred to as the Kailua Park, Kailua-Kona, Hawai‘i, TMKs (3) 7-5-005: Parcel 007 and (3) 7-5-005: Parcel 083. This Phase I ESA was prepared for Hawai‘i County. In December of 2008, Parcel 007, formerly known as the Old Kona Airport State Recreation Area, was transferred from the State of Hawai‘i to the County of Hawai‘i. This Phase I ESA was conducted as part of the County of Hawai‘i’s due diligence efforts regarding acquiring the parcel for the expansion and improvements of Kailua Park.

3.1 PURPOSE

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), owners and operators of real estate where there is hazardous substance contamination may be held strictly liable for the costs of cleaning up contamination found on their property. No evidence linking the owner/operator with the placement of the hazardous substances on the property is required.

Congress, in response to pressure from business and academic groups, established the “innocent landowner defense” in the 1986 amendments to CERCLA. These are known as the Superfund Amendments and Reauthorization Act (SARA). To establish innocent landowner status, the landowner “must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial and customary practice in an effort to minimize liability.”

In an effort to clarify what constitutes “all appropriate inquiry,” the American Society for Testing and Materials (ASTM) has developed a standard that provides specific definition of the steps one should take when conducting a “due diligence” Phase I environmental site assessment for commercial real estate. The site assessment documented herein complies with the current ASTM E1527-05 Standard Practice for Environmental Site Assessments.

This investigation was initiated as a requirement regarding the lease of the property. The purpose of the investigation is to identify and evaluate evidence that may indicate any recognized environmental conditions at the site due to past or current management of chemicals or other materials that, if released or not properly controlled, could present a risk to human health or the environment.

3.2 SCOPE OF WORK

The purpose of this Phase I ESA was to identify whether surficial or historical evidence indicated that the presence of recognized environmental conditions, as defined by ASTM E1527, that may adversely impact the Property and whether additional investigation is warranted. This Phase I ESA was conducted using the scope and limitations of ASTM E1527. The information provided is assumed to be correct and complete, unless noted otherwise. The scope of work included the following:

- Summarize general geologic and hydrogeologic conditions onsite based on available literature and professional experience.

- Review historical aerial photographs, information of past ownership, and conduct interviews with knowledgeable persons to evaluate historic land use.

- Conduct a review of local, state, and federal agency lists and available files of reported hazardous waste sites and hazardous substance/petroleum sources and releases. KI queried the Environmental Data Resources, Inc. (EDR) database of federal and state environmental release listings. The EDR database provides results in proximity to the site following American Society for Testing and Materials (ASTM) search distance guidelines, is continually updated, and is considered one of the most comprehensive in the industry.

- Conduct a site reconnaissance visit to evaluate current on-site use/storage of hazardous materials and visual indications that this use may have impacted the site.

- Prepare this report summarizing the findings of the Phase I ESA and present any recommendations for additional site investigation activities and/or corrective actions for the site, if warranted.

4.0 SITE DESCRIPTION

4.1 LOCATION AND DESCRIPTION

The site (TMKs 7-5-005: Parcel 007 and 7-5-005: Parcel 083) consists of approximately 117 acres of land in Kailua-Kona on the island of Hawai‘i (Appendix A, Figure 1). The subject property is used as a community park and recreational center. Currently the site consists of baseball/softball fields, soccer fields, multiuse football and soccer fields, tennis courts, basketball courts, a swimming pool, a gymnasium, maintenance storage facilities, a Department of Land and Natural Resources (DLNR) warehouse, a former DMV facility, canoe club storage, an in-line skating rink, playground, an events pavilion, a skateboarding park, beach access, beach pavilions, restroom facilities and parking areas. The site is bordered by undeveloped land to the north and south; the Swing Zone Golf Facility and undeveloped land to the east; and residential homes and the Pacific Ocean to the west.

The surface area of Parcel 007 generally consists of asphalt groundcover where the Old Kona Airport Runway is found. Areas adjacent to the shoreline are lightly landscaped with grass and sand groundcover. Parcel 007 also encompasses parts of the Kailua Park. The groundcover for this area is mainly grass, with concrete and asphalt found at the swimming pool and gymnasium. The ground cover for Parcel 083 consists of grass concrete and asphalt. Visual observation of the accessible portions of the property did not identify evidence of onsite pits, dry wells, or illegal chemical dumping.

4.2 SITE AND VICINITY GENERAL CHARACTERISTICS

4.2.1 SITE TOPOGRAPHY AND DRAINAGE

Topographic map coverage of the site vicinity is provided by the United States Geological Survey, Island of Hawai‘i 7.5-minute Keahole Point Quadrangle, 1996. The elevation of the subject property is approximately thirteen (13) feet above msl. The site and surrounding areas appeared relatively flat, with no discernible gradient. The nearest body of water is the Pacific Ocean, located approximately 20 feet west of the site. The groundcover within the vicinity of TMK 7-5-005: Parcel 083, which comprises an area of the current park, is generally grass, with areas covered by asphalt and concrete. The groundcover within the vicinity of TMK 7-5-005: Parcel 007, which comprises the runway for the Old Kona Airport and the remainder of the Kailua Park, is generally asphalt and concrete, except along the edge of the shoreline where sand and some grass cover can be found. The northern boundary of this parcel is covered by old lava flows. The area of the park that is found within Parcel 007 is primarily grass with areas of concrete and asphalt near the gymnasium and swimming pool.

4.2.2 HYDROGEOLOGY

The primary drinking water in the Hawaiian Islands is drawn from basal groundwater. Basal groundwater is formed by rainwater percolating down through the residual soils and permeable volcanic rock. The entire island situated below sea level, except within rift zones of the volcanoes, is saturated with ocean salt water. Freshwater forms a basal lens called the "Ghyben-Herzberg" lens that floats on the salt water. A zone of transition between the fresh groundwater

and the ocean salt water occurs due to the constant movement of the interface because of tidal fluctuations, seasonal fluctuations in recharge and discharge, and aquifer development (Macdonald, et al., 1983).

Downward percolation of rainwater may be stopped by impermeable layers such as dense lava flows, alluvial clay layers and volcanic ash. The groundwater then forms a perched or high-level aquifer, which is not in contact with salt water. Recharge of the aquifer occurs in areas of high rainfall, which are the interior mountainous areas. The groundwater flows from the recharge areas to the areas of discharge along the shoreline. Frictional resistance to groundwater flow causes it to pile up within the island until it attains sufficient hydraulic head to overcome friction. Thus, basal groundwater tends to slope toward the shoreline.

The site is underlain by the Keauhou Aquifer System, which is part of the Hualalai Aquifer Sector on the island of Hawai‘i. The aquifer is classified by Mink and Lau, 1990, with the system identification number 80901111 (11211). This system includes an unconfined basal aquifer in flank (horizontally extensive lavas) lithology. The groundwater in this aquifer is described as currently used and containing groundwater with a low salinity [250 to 1,000 milligrams/liter (mg/l) Chloride (Cl^-)]. The groundwater is a drinking water source, and is described as irreplaceable with a high vulnerability to contamination (Mink and Lau, 1990).

4.2.3 GEOLOGY

The island of Hawai‘i is the largest of the Hawaiian Islands. Hawai‘i consists of five shield volcanoes. Kohala in the north is the oldest, Hualalai on the west is a dormant volcano, Mauna Kea, also dormant, is the largest of the volcanoes, Mauna Loa and Kilauea on the south are the most active on the island. The subject property is located at the western base of Hualalai.

4.2.4 SOILS

The soil at the site is mapped as pahoehoe lava flows. Pahoehoe lava flows have a billowy, glassy surface that is relatively smooth. However, in some areas the surface is rough and broken, with hummocks and pressure domes. Pahoehoe lava has no soil coverings and is typically bare of vegetation except for mosses and lichens. Elevations range from sea level to 13,000 feet above mean sea level and the annual rainfall amounts range from 10 to 140 inches per year. (USDA, 1972).

5.0 RECORDS REVIEWED

A comprehensive review of historical data for the site was conducted for the purpose of evaluating whether past or current practices (i.e., the use, storage, treatment, generation, and/or disposal of hazardous substances or petroleum products) on-site or at adjacent properties may be of environmental concern. The following sections lists the historical information sources reviewed. They include the Environmental Data Resources, Inc. (EDR) report that describes federal, state, and local lists and available files of reported hazardous substance/petroleum product sources and releases, relevant aerial photographs, and relevant property transaction records.

5.1 STANDARD ENVIRONMENTAL RECORD SOURCES

To obtain information concerning recognized environmental conditions at or near the parcels, Kimura International contracted Environmental Data Resources, Inc. (EDR) to conduct an environmental database search. EDR is a company that specializes in the review of public regulatory environmental databases in accordance with ASTM E 1527-05. Lists were reviewed for incidents and releases at the site and at properties within the vicinity, according to or exceeding the ASTM recommended search distances. The complete EDR report is located in Appendix B.

Federal and State databases reviewed are provided below.

Federal Databases:

- National Priorities List (NPL)
- Proposed NPL
- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- CERCLIS No Further Remedial Action Planned (CERC-NFRAP)
- Corrective Action Report (CORRACTS)
- Resource Conservation and Recovery Information System – treatment, storage, and disposal facilities (RCRIS-TSD)
- Resource Conservation and Recovery Information System – large quantity generators (RCRIS-LQG)
- Emergency Response Notification System (ERNS)
- Biennial Reporting System (BRS)
- Superfund (CERCLA) Consent Decrees
- Records of Decision (ROD)
- De-listed National Priority List (NPL)
- Facility Index System/Facility Identification Initiative Program Summary Report (FINDS)
- Hazardous Materials Information Reporting System (HMIRS)
- Material Licensing Tracking System (MLTS)
- Mines Master Index File (MINES)
- NPL Liens

- PCB Activity Database System (PADS)
- Department of Defense Sites (DOD)
- Storm Water General Permits
- Listing of Brownfields Sites
- Risk Management Plans (RMP)
- RCRA Administrative Action Tracking System (RAATS)
- Toxic Chemical Release Inventory System (TRIS)
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act/TSCA (FTTS INSP)
- Section 7 Tracking Systems (SSTS)
- Integrated Compliance Information System (ICIS)

State Databases:

- State Hazardous Waste Sites List (SHWS)
- State of Hawai‘i Department of Health (DOH) Leaking Underground Storage Tank (LUST) Database
- DOH Registered Underground Storage Tanks (UST) Database
- Voluntary Response Program Sites (VCP)
- DOH Hazard Evaluation and Emergency Response (HEER) Office State Spills List (SPILLS)
- Sites with Institutional Controls (INST CONTROL)
- Brownfields Sites (BROWNFIELDS)
- List of Permitted Facilities (AIRS)
- Permitted Dry Cleaner Facility Listing (DRYCLEANERS)

Other Databases:

- Historical Topographic Maps

The subject property was not identified in any of the above-mentioned databases. However, various properties in the vicinity of the site were listed in the databases as either historically or presently an area with possible environmental concerns.

5.1.1 FEDERAL NPL

The National Priorities List (NPL) is a subset of the CERCLIS or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCLIS). The NPL lists over 1,150 of the nation’s most dangerous uncontrolled or hazardous waste sites requiring cleanup. There were no NPL sites identified within a one-mile radius of the site.

5.1.2 FEDERAL CERCLIS

CERCLIS is a Federal database maintaining national information on over 15,000 sites identified as hazardous or potentially hazardous, which may require action. These sites are currently being investigated or an investigation has been completed regarding the release of hazardous substances. The most serious of this list as ranked by the hazardous ranking system are

transferred to the NPL. No active CERCLIS sites were identified within a 0.5-mile radius of the target property.

5.1.3 FEDERAL RCRA

The Resource Conservation and Recovery (RCRA) Information System (RCRIS) is a national system used to track events and activities that fall under the jurisdiction of RCRA. There are three significant subsets to RCRIS:

- RCRA treatment, storage, and disposal facilities (TSDs). Includes facilities that treat, store, dispose, or incinerate hazardous waste.
- RCRA generators. Includes small quantity generators (SQG), which create between 100 kilograms (kg) and 1,000 kg of hazardous waste per month or meet other RCRA requirements, and large quantity generators (LQG) which create more than 1,000 kg of hazardous waste per month.
- RCRA Corrective Action Sites (CORRACTS). Includes sites with reported corrective actions.

The site itself was not a listed RCRA facility. Additionally, the database search did not identify any RCRA CORRACTS facilities within a 1-mile radius of the site. RCRA TSD facilities were not found within a 0.5-mile radius of the site. RCRA LQGs and SQGs were also not identified within a 0.5-mile radius of the site.

5.1.4 FEDERAL ERNS

The Emergency Response Notification System (ERNS) is a national database, which contains information on specific notifications of releases of oil and hazardous substances into the environment. The system stores data regarding the site of the spill, the material released, and the medium into which it occurred. The site was not listed as an ERNS facility. No surrounding properties within a 0.5-mile radius of the site were identified in the database.

5.1.5 STATE HAZARDOUS WASTE SITES

The CERCLIS List is a compilation of known or suspected uncontrolled or abandoned hazardous waste sites. These sites either have been investigated or are currently under investigation by the EPA for the release, or threatened release, of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation and ultimately placed on the National Priorities List. The State of Hawai‘i does not have a formal “State Superfund” program. Therefore, the State Hazardous Waste Sites (SHWS) are the State of Hawai‘i’s equivalent to the federal EPA’s CERCLIS database. Additionally, because this information is acquired from the State of Hawai‘i Hazard Evaluation and Emergency Response office, these sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup that use state funds (state equivalent superfund) are identified along with sites where cleanup is paid for by the potentially responsible parties. The EDR database did not identify the site as a SHWS. Additionally, the database search did not identify any SHWS facilities within a 0.5-mile radius of the subject property.

5.1.6 STATE LANDFILL AND/OR SOLID WASTE DISPOSAL SITE LISTS

The Hawai‘i State Department of Health (DOH), Solid and Hazardous Waste Branch (SHWB) has on record, facilities that have received a solid waste management permit, including solid waste landfills, transfer stations, and incinerators. The database search identified no such facilities within a one-mile radius of the site.

5.1.7 STATE USTS

Certain underground storage tanks (USTs) are required to be registered by federal or state regulations. For regulated USTs, notifications must be filed for existing USTs, USTs closed in place, and new USTs. The subject parcel was not identified as a UST facility. Additionally, the database search did not identify any UST facilities located within a 0.25-mile radius of the site.

5.1.8 STATE LUSTS

The DOH maintains a report on leaking underground storage tanks (LUSTs). The report is a comprehensive listing of reported LUSTs in Hawai‘i. The subject property was not listed as a LUST facility. However, the database search did identify one (1) LUST facility within a 0.5-mile radius of the site.

The *Kona Radio Staion/Baseyard* was found to have two cases of “Confirmed Releases” from a LUST. In both cases site cleanup has been completed and “No Further Action” (NFA) was issued by HDOH. Based on the facility’s status of NFA, as well as its location downgradient (lower) from the subject property, KI believes that the *Kona Radio Station/Baseyard* does not pose an environmental threat.

5.2 ADDITIONAL ENVIRONMENTAL RECORD SOURCES

5.2.1 HEER RELEASES LIST

Kimura International reviewed the most recent DOH HEER Office Releases List, for information regarding reported spills or releases of petroleum products or hazardous substances on the site. The site was not listed on the HEER Release List.

5.2.2 OTHER FEDERAL REGULATORY DATABASES

The EDR database also included a number of other regulatory databases that are not specified by the ASTM Standard. The EDR database did not identify the Property in any of these regulatory databases. The EDR database included the following:

- CONSENT – Superfund (CERCLA) Consent Decrees
- ROD – Records of Decision
- Delisted NPL – National Priority List Deletions
- FINDS – Facility Index System/ Facility Identification Initiative Program Report
- HMIRS – Hazardous Materials Information Reporting System
- MLTS – Material Licensing Tracking System
- MINES – Mines Master Index File
- NPL Liens – Federal Superfund Liens
- PADS – PCB Activity Database System

- RAATS – Toxic Chemical Release Inventory System
- TRIS – Toxic Chemical Release Inventory System
- TSCA – Toxic Substances Control Act
- SSTS – Section 7 Tracking System
- FTTS – FIFRA/TSCA Tracking System – FIFRA (Federal Insecticide, Fungicide, and rodenticide Act)/ TSCA

5.3 AERIAL PHOTOGRAPHS AND HISTORIC MAPS SOURCES

Aerial photographs of the site were obtained from R.M. Towill Corporation. Aerial photographs reviewed for the site were for the years 1953, 1968, 1977, 1989 and 2000 (Appendix E).

In the 1953 aerial photograph, the subject property has been developed and used as the old Kona Airport. The structures present onsite were most likely associated with the everyday operations of the airport. The runway stretches from north to south. Development surrounding the site is limited, except along the shoreline to the south.

The 1968 aerial photograph shows that the runway had been extended to the north. A new structure, which looks like the passenger terminal, has been built. Development continues to expand to the south of the site. Queen Ka‘ahumanu Highway has also been built since the previous aerial photo.

In the 1977 aerial photograph, the southern end of the runway has begun its transformation into a recreational park. In the surrounding areas, most noticeable is the completion of Kaiwi Street to the southwest of the site. A number of structures have been built along Kaiwi Street, Kuakini Highway, and Palani Road.

The 1989 aerial photo starts to show what the site and it surroundings look like today. The softball field and tennis courts can be identified and the Events Pavilion has been built. The area to the south and southwest has continued to grow and develop. Development has now expanded beyond Palani Road. Residential homes have begun to appear along the shoreline, west of the site.

The 2000 aerial photograph depicts how the site appears today. Additions from the previous aerial photograph include the gymnasium, swimming pool, in-line hockey rink, and baseball field. In the surrounding areas, Makala Boulevard and Loluku Street have been built to the east and additional homes are visible to the west. Development has continued to expand to the south and southwest.

5.4 OWNERSHIP HISTORY INFORMATION

<u>TMK (3) 7-5-005: Parcel 007</u>
A title search, conducted at the State of Hawai‘i Bureau of Conveyances (Appendix D), identified the State of Hawai‘i as the current fee owners for TMK (3) 7-5-005: Parcel 007. The earliest transaction record dated March 19, 1949, listed the Territory of Hawai‘i/Hawai‘i

Aeronautics Commission, as the property owner of parcel 007. Records throughout the years show that the Territory of Hawai‘i, which became the State of Hawai‘i in 1959, remained the owner of parcel 007. Based on interviews, parcel 007 was transferred to the County of Hawai‘i in December 2008

TMK (3) 7-5-005: Parcel 083

A title search, conducted at the State of Hawai‘i Bureau of Conveyances, identified Hawai‘i County as the current fee owner for TMK (3) 7-5-005: Parcel 083. The earliest transaction record dated February 28, 1978, listed the State of Hawai‘i as the original property owner. It is not clear when parcel 083 was then transferred to the County of Hawai‘i, but records show that the parcel was set aside for the purpose of a park in 1978.

6.0 SITE RECONNAISSANCE

The purpose of the site reconnaissance was to observe and document visual evidence of the use, storage, generation, and disposal of potentially hazardous substances and petroleum products at the site. KI personnel conducted the site reconnaissance on March 31, 2009, during which potentially hazardous materials present at the site were identified and cataloged. In addition, KI personnel sought out physical evidence of possible releases of hazardous substances or petroleum products, such as discolored soil, flooring or paving; visible leaks; odors; and signs of stressed vegetation. A visual survey of the adjacent properties from public thoroughfares was also conducted. However, **no** samples were taken of any material to verify hazardous materials content. *Unless specifically noted otherwise, none of the suspected asbestos, lead or arsenic containing material posed an immediate threat to the environment or human health, at the time of the site reconnaissance*. Site photos are included in Appendix C. The following discussion presents the observed conditions of the subject site and surrounding properties, and identifies suspect hazardous material.

6.1 OBSERVATIONS AT TMK 7-5-005: PARCEL 083

TMK 7-5-005: Parcel 083 encompasses 14 acres near the center of the area known as Kailua Park/Old Kona Airport Park/Maka'eo. Currently located on this parcel is the old terminal building housing two canoe halau and park maintenance facilities, a lighted baseball/softball field, a restroom building, four tennis courts and a tennis pavilion, the Na Kamalei Toddler Playground, horseshoe pits and an asphalt basketball court.

6.1.1 CANOE HALAU/PARK MAINTENANCE STORAGE AND OFFICES

This single story building, approximately 60' wide and 315' long, was once the terminal facility for the old Kona Airport. Today it is used by COH Park Maintenance as offices, locker rooms, storage and maintenance areas, by two (2) canoe halau for storage and maintenance of canoes, and by a boxing club to hold equipment and to provide training space.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTES

Housed within this structure are a variety of materials that can be considered hazardous and are used by Park Maintenance crews and members of the canoe halaus. These materials include a variety of paints, solvents, finishes, lubricants and thinners. However, all of these materials appeared to be properly stored, and KI personnel observed no evidence of spills or leaking storage containers. The largest volume of liquid material was two 55-gallon drums of acetone found in the canoe halau portion of the building. While the drums were in excellent condition, no labels were evident indicating their contents and were improperly stored. OSHA regulations require that such volumes of solvents be located in an indoor storage room to reduce the risk of fire and to ensure containment in the event of a spill. Also observed within this structure were two pallets of fertilizer in 50 lbs. bags. All of the bags appeared to be in good condition, were protected from the elements, and showed no signs of leaking. The west end of the structure was used for lawnmower maintenance. Observed in this area were spare tires and two spare batteries. The batteries appeared to be used, but were still in acceptable condition and were awaiting proper disposal. A fenced area on the north side of the building was used to store empty 55-

gallon drums and spare tires. There were no indications of hazardous waste storage or disposal at this facility.

ASBESTOS CONTAINING BUILDING MATERIALS

The structure, built in 1947, was used as the old Kona Airport terminal building. While a number of renovations to the building appear to have taken place since then, much of the structure appears to be original. As a result, the building may contain a variety of asbestos containing materials. From the observations made during the site reconnaissance, these materials may include, but not be limited to, mastics along the roofline and under roofing material, window and door caulking and drywall joint compound. Tile grout within the public restrooms is also a suspect asbestos containing materials. However, the newer age of the restrooms greatly reduces this possibility. Other building components that were not visibly accessible at the time of the survey may also contain asbestos, such as pipe insulation and/or Transite piping.

LEAD BASED PAINT

The variety of paint colors were observed on both the interior and exterior of the structure, including green, white, brown and yellow paints. Typically these colors exhibit high lead concentrations, often greater than the EPA and HUD threshold of 0.5% lead by weight. As a result, there is a high probability that these paints would be considered to be lead-based paints. Paints containing any analytically detectable lead concentrations would be consider lead-containing paints by OSHA and HIOSH. Due to its age, it is expected that the majority of the painted surfaces within and on the structure would be categorized as lead-containing paint.

POLYCHLORINATED BIPHENYL (PCB) CONTAINING EQUIPMENT

Fluorescent light ballasts manufactured before 1978 may contain capacitors with small amounts of PCBs. A number of fluorescent light fixtures were observed throughout the structure and appeared to serve as the building's primary source of lighting. Due to the age of the building, it is likely that a number of these fixtures may house PCB containing ballasts. Despite this fact, the fixtures appeared to be in good condition and there were no leaks observed from any ballasts.

ARSENIC CONTAINING MATERIALS

Being an old, wooden structure, there is a high probability that much of the lumber used to construct the building was treated with chromated copper arsenate (CCA) to increase longevity and prevent attack from termites. The arsenic component of CCA is of primary concern, and appears on OSHA's Hazard Communications list. It was noted that much of the wooden ceiling was in poor condition and was rotted through in many locations. While unlikely, it has been shown that CCA can leach from treated lumber that is not sealed or protected; therefore the rotting wooden ceiling may be some cause for concern if the lumber has been treated with CCA.

6.1.2 FIELD D – LIGHTED BASEBALL AND SOFTBALL FIELDS

Field D covers approximately 5.22 acres and features four baseball and softball fields in each corner. Two of the fields, roughly oriented in a north-south direction, are skinned and marked for baseball games with 90' diamonds. The two remaining fields, roughly oriented east-west, are marked for informal softball games. Field D is surrounded by 10 light towers each holding 8 high intensity field lights.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
No chemicals, hazardous materials, or hazardous waste were observed on this portion of the site. Two scorers' booth and storage areas have been constructed behind north and south facing lighted ball fields. These areas do not contain any chemicals or hazardous materials.

ASBESTOS CONTAINING MATERIALS
Structures on this portion of the site with potential asbestos containing materials are the scorers' booths and dugouts behind the north and south facing baseball fields. Suspect materials include roofing material (shingles) and associated mastics and any window/door caulking used on the structures. In addition, an electrical switchbox located on the northeast corner of the fields exhibited a mastic around its door that may contain asbestos.

LEAD BASED PAINT
All painted surfaces may contain detectable levels of lead. These surfaces would include the scorers' booths and dugout roofs on the north and south fields, the dugout benches on the south field, the electric scoreboard on the north field, and the two yellow football goal posts bisecting the ball fields. The condition of the all the paint is fair to good, with some flaking observed on the scoreboard and the goal posts.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
Potential sources of PCBs on this portion of the site are the field lights surrounding the four baseball diamonds. There are ten poles supporting 8 high intensity stadium-style lights. Each of these may hold PCB containing ballasts. However their height made them inaccessible at the time of the survey, and their PCB contents could not be verified. Another potential source of PCBs is the electric scoreboard on the north field. In addition, the electrical switchbox used to turn on the field lights, located at the northeast corner of the fields, housed a number of components that may use PCB containing oils. A "NO PCB" label was not present on the outside of the electrical box; therefore it should be assumed that the components do contain PCBs unless sampling and laboratory analysis proves otherwise.

ARSENIC CONTAINING MATERIALS
The wooden scorers' booths and wooden dugout benches are probable sources of arsenic, as they may be constructed from treated lumber.

6.1.3 LIGHTED BALL FIELD RESTROOM BUILDING
This building, located on the east end of the fields, is a single story CMU structure covering approximately 700 sq. ft. and features men's and women's public bathrooms.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
No chemicals or hazardous waste were present or observed at this location during the time of the survey.

ASBESTOS CONTAINING MATERIALS
Potential asbestos containing materials include the grout used for the ceramic tile within the restrooms, sink insulation, and any mastics or caulking used for the sinks, toilets and stalls. In addition, the roof may be constructed using asbestos containing building components such as weatherproofing or mastics.

LEAD BASED PAINT
The interior of the building featured CMU walls with a white, possibly lead-containing/based paint. Portions of the roof and eave were also painted, possibly with a lead-containing/based brown paint.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
The fluorescent light fixtures within the restroom facility may hold PCB containing ballasts.

ARSENIC CONTAINING MATERIALS
The roof structure is primarily made of wood that may have been treated. The treatment process often infuses the wood with significant amounts of arsenic.

6.1.4 NA KAMALEI TODDLER PLAYGROUND
The Na Kamalei Toddler Playground covers approximately 5,600 sq. ft. just east of the canoe halau and park maintenance building. The area features a high density polyethylene (HDPE) play structure for toddlers and a larger steel jungle gym and swing set for older children, as well as a small wooden shelter/pavilion with wooden benches and a table.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
No chemicals or hazardous waste were observed at the Na Kamalei Playground during the time of the site reconnaissance survey.

ASBESTOS CONTAINING MATERIALS
Suspect asbestos containing materials were identified in the playground shelter, and consisted of caulking, mastic and roofing materials. No suspect asbestos containing materials were observed on the playground equipment.

LEAD BASED PAINT
Wooden surfaces on the shelter, including the walls, benches and tables all were covered with paint that may contain lead. In addition, the steel playground equipment may have coats of paint with detectable levels of lead. Finally, three light posts surrounding the playground appear to have a coat of light brown paint that may contain lead. The paint on all these surfaces was in fair to good condition.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
The light fixtures surrounding the playground may hold PCB containing equipment.

ARSENIC CONTAINING MATERIALS
The wooden shelter may have been constructed of lumber treated with an arsenic containing chemical, and may therefore contain significant amounts of arsenic.

6.1.5 TENNIS COURTS AND PAVILION
This portion of the site, located on the southeastern end of the TMK parcel, consists of four tennis courts and a small tennis pavilion to the east of the courts. Site reconnaissance observations are as follows.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
No chemicals, hazardous materials or hazardous waste were observed on this portion of the site.

ASBESTOS CONTAINING MATERIALS
Suspect asbestos containing materials would include caulking and mastics that are associated with the aluminum roof or other building components, such as the door to the storage room of the pavilion. Asbestos containing materials were not observed on the tennis courts themselves.

LEAD BASED PAINT
All painted surfaces may contain detectable levels of lead. These surfaces would include the net posts, benches and green CMU "warm-up" walls on the tennis courts, and all of the walls on the tennis pavilion.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
The tennis courts features old fluorescent light fixtures to allow for night play. These fixtures may hold PCB containing ballasts. In addition, fluorescent light fixtures within the pavilion may also hold PCB containing ballasts.

ARSENIC CONTAINING MATERIALS
Any structures constructed of treated lumber may contain significant amounts of arsenic. These would include the benches used on the tennis courts and the tennis pavilion.

6.1.6 HORSESHOE PITS
The horseshoe pits are located just south of the tennis courts on the southeastern end of the TMK parcel. The area covers approximately 7,900 sq. ft. and features 12 pits, a number of picnic benches, a small shelter on the west end and a shed on the east end.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
The shelter area appears to be used to store cans of paint, a lawnmower, and a rusty, unlabeled 55-gallon drum with unknown contents. These items are adjacent to the shelter and exposed to the elements. The 55-gallon drum is resting directly on sandy ground.

ASBESTOS CONTAINING MATERIALS
A used sink/counter top was found resting against the small shed on the east end of the horseshoe pits. The underside of the sink may contain an asbestos containing insulation. Both sheds may also feature asbestos containing building components, such as mastics and caulking.

LEAD BASED PAINT
All painted surfaces may feature lead-containing or lead-based paint. These include both sheds and the scoreboards for the horseshoe pits. Additionally, the picnic benches may have also been painted with lead-containing/based paint.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
No potential sources of PCBs were identified here at the time of the site reconnaissance.

ARSENIC CONTAINING MATERIALS
Any structures made of treated lumber, such as the shelters, scoreboards and picnic benches may contain significant amounts of arsenic.

6.1.7 BASKETBALL COURT
A lone asphalt basketball court is located between the tennis courts and the horseshoe pits on the southeastern most border of the TMK parcel. The court is unlit and is separated from an adjacent parking lot by a series of 2 foot concrete pillars.

No chemicals, hazardous waste, asbestos or arsenic containing materials, or PCB containing equipment were observed at this location during the time of the site reconnaissance survey. The concrete pillars were painted with a yellow, possibly lead-containing, paint. This paint was in fair condition, and was flaking in various areas.

6.2 OBSERVATIONS AT TMK 7-5-05: PARCEL 007

TMK 7-5-05: Parcel 07 covers almost 103 acres along the eastern coast of the island of Hawai‘i and encompasses the area formerly known as the Kona Airport. Today, the area is referred to as Kailua Park/Old Kona Airport Park or Maka‘eo, and completely surrounds TMK 7-5-005: Parcel 083. A variety of facilities are now located on this parcel, including the Simmons Baseball Field, three outdoor basketball courts, Kekuaokalani Gym, the Kona Community Aquatics Center, two multi-purpose fields and a dedicated soccer field, an inline skating rink, a former DMV office, State DLNR/DOCARE Baseyard and Offices, an interim skateboarding park located on the foundations for two future canoe halaus, a central events pavilion, a community built walking and jogging path, beach pavilions and a long strip of asphalt that covers the former airport runway and now serves as an access road and parking area for beachgoers. Potential environmental hazards at each of these facilities are presented below.

6.2.1 FIELD A – SIMMONS BASEBALL FIELD

Field A is a dedicated baseball diamond known as the Simmons Baseball Field. Located here are a two story scorers' booth, fenced dugouts and aluminum bleachers.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE

No chemicals or hazardous waste were observed at the field during the site reconnaissance survey.

ASBESTOS CONTAINING MATERIALS

Suspect asbestos containing materials identified at the field include building components of the scorers' booth, including mastics used for the roofing material and any caulking potentially used around the doors of the structure. While unlikely, asbestos weatherproofing material may have been applied to the roofs of the scorers' booth and the dugouts.

LEAD BASED PAINT

All painted surfaces could potentially be coated with lead containing/based paint. These surfaces include the scorers' booth and areas of the grandstands. KI personnel also observed spots of gray paint applied to areas of the dugout fences, presumably to protect fence joints from the elements.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT

No suspect PCB containing equipment was observed on this portion of the parcel.

ARSENIC CONTAINING MATERIAL

Suspect arsenic containing material at Simmons Field would include all of the wood used to construct the scorers' booth. If the lumber used was treated, significant amounts of arsenic could be present within it.

6.2.2. OUTDOOR BASKETBALL COURTS

Three outdoor basketball courts were recently constructed in the northeast corner of the parcel. The courts feature all-weather surfaces similar to those found on traditional tennis courts and backboards and rims that are in excellent condition.

At the time of the survey, no chemicals, hazardous waste, asbestos containing materials, lead based paint, or arsenic containing materials were observed on this portion of the property.

Five light posts with fluorescent lights were present at the site. Electrical boxes were attached to two of the posts, approximately 10 feet off the ground. The light fixtures and electrical equipment may house PCB containing material. However, no further investigation of the electrical components was performed at the time of the survey.

6.2.3 KEKUAOKALANI GYMNASIUM

The Kekuaokalani Gymnasium is a complex that covers nearly a half an acre and features office space, public restrooms and basketball court facilities.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE

A closet in one of the gym offices was being used to store a variety of cleaners for the gym facility. All substances were properly stored, and no leaks were evident at the time of the survey. A second room in the same office was also being used as a dark room for a photography hobbyist and contained a number of chemicals necessary for the development of film. All chemicals were properly stored, and no leaks were evident.

ASBESTOS CONTAINING MATERIAL

The gym offices featured 12" x 12" vinyl floor tile (VFT) and black cove base, both materials that commonly contain asbestos. Additionally, the mastics used to adhere these materials to surfaces also commonly contain asbestos. Other suspect materials in the building include the drop acoustic ceiling tiles found in the offices and the bathrooms, window and door caulking, and the grout used on the tiles in the bathrooms. Within the gym, the wooden floor may be adhered to concrete foundation using an asbestos containing mastic or caulking. Finally, there may also be asbestos containing material on the roof of the structure in the form of mastics and caulking flashing or other roofing material.

LEAD BASED PAINT

All painted surface could feature layers of lead containing paint. These would include all interior and exterior walls of the gym, bathrooms and offices.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT

The gym offices and bathrooms use fluorescent lighting for interior illumination. These fluorescent light fixtures may house PCB containing ballasts. The gym uses high intensity lamps that may also contain PCB ballasts.

ARSENIC CONTAINING MATERIALS

No suspected arsenic containing materials were observed at the time of the site reconnaissance.

6.2.4 KONA COMMUNITY AQUATIC CENTER

The Kona Community Aquatic Center is adjacent to the west end of Kekuaokalani Gym and consists of a 50 meter pool, wading pool, a pump room and an office and locker room building.

CHEMICALS, HAZARDOUS MATERIALS AND HAZARDOUS WASTE

The pump room is used for the storage of a variety of chemicals necessary for the daily maintenance of the pool. These include various cleaners and bleach, pool conditioner, and a large volume of hydrochloric acid (HCl). The hydrochloric acid is used as a chlorine source for the pool. Approximately 36, one gallon bottles of concentrated HCl were being stored along one wall of the pump room. Also present was a 100+ gallon storage tank containing diluted HCl that was incorporated into the pump system for the pool. All chemicals were properly stored and

their containers were in good condition. There was no evidence of leaks or discharges at the time of the site reconnaissance.

To the south of the pump room is a 1000-gallon above ground storage tank (AST) containing propane. The tank rests on two concrete blocks on a concrete foundation and is surrounded by a CMU wall approximately 8 feet high. The tank was properly labeled and in good condition at the time of the survey.

ASBESTOS CONTAINING MATERIALS

A variety of suspect asbestos containing material was observed in the pump room, office space and locker room building around the pool area. In the pump room, suspect materials included the textured insulation around the pool pumps and insulation around the piping. In the office space, a variety of vinyl floor tile was observed, as well as cove base along the base of the walls. The tiles, cove base and the mastic associated with them often contain asbestos. Other suspect materials include the caulking around the doors and windows, caulking around the sink in the kitchen area, drywall joint compound, acoustic ceiling tile, tile grout and the skim coating on the walls of the office building. Finally, many roofing components such as mastics and caulking often contain asbestos, and may they may be present on the roofs of the pump room and office building.

LEAD BASED PAINT

The painted surfaces such as the walls of the interior and exterior of the office building and locker room area, pump room, and CMU wall around the propane AST may all have layers of lead containing/based paint. In addition, other suspect paint would include the lockers in the changing rooms.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT

The fluorescent light fixtures in the office building, pump room and surrounding the pool all may house PCB containing ballasts. Finally, the electrical equipment within the pump room, such as the transformer, may hold PCB containing oil.

ARSENIC CONTAINING MATERIALS

Any treated lumber used in the construction of the pump room or the office building may contain significant amounts of arsenic. However, suspect lumber appears to only have been used on the roofs of the buildings.

6.2.5 FIELDS B, C AND E – MULTIUSE FIELDS

Fields B, C and E surround the gym and pool complex to the south and west. Field B is a multiuse field often marked for football and soccer practices. Field C has two dedicated Little League baseball fields that can also be used for softball games. The fields both feature bleachers and dugouts. Field E is a dedicated AYSO soccer field, were two games can be run simultaneously.

No chemicals, hazardous waste, asbestos or arsenic containing material, or PCB containing equipment were observed in these areas at the time of the survey. The only painted surfaces are the dugout benches found on Field C. This paint may contain lead.

6.2.6 AYSO STORAGE PAVILION

A storage pavilion used primarily by the AYSO soccer association is located between Field C and Field E. The single story wooden structure appears to be used for storage and a meeting area.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE

No chemicals or hazardous waste were observed at this location during the time of the survey.

ASBESTOS CONTAINING MATERIALS

Suspect asbestos containing material at this location included various roofing material components, such as mastics and flashing and door caulking.

LEAD BASED PAINT

The structure appears to be relatively new, and therefore the use of lead based paint is not likely. However, the paint used may contain detectable amounts of lead and still be subject to OSHA and HIOSH regulations.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT

No PCB containing equipment was observed at this location.

ARSENIC CONTAINING MATERIALS

The wooden structure may have been constructed using treated lumber. As a result, the wood may have been infused with significant amounts of arsenic.

6.2.7 FORMER DMV OFFICE

This single story wooden structure is located immediately west of the old terminal building, and covers approximately 3,700 sq. ft. It was formerly used as a Department of Motor Vehicles Office, but now appears to be used as a meeting area and office space for community organizations. An area behind the house is used to store canoes.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE

No chemicals or hazardous waste were observed at this location during the time of the survey.

ASBESTOS CONTAINING MATERIALS

Suspect asbestos containing material at this location include 12” x 12” VFT, cove base and their associated mastics, drywall joint compound, window and door caulking, and roofing material components such as shingle or flashing caulking.

LEAD BASED PAINT

The exterior of the building was covered with a blue paint that may contain detectable levels of lead. In addition, this paint may be covering layers of paint that contain higher levels of lead.

The interior of the building featured white paint, which may also contain detectable levels of lead.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
No PCB containing equipment was observed at this location.

ARSENIC CONTAINING MATERIALS
This wooden structure may have been built with treated lumber which may contain significant amounts of arsenic.

6.2.8 DEPARTMENT OF LAND AND NATURAL RESOURCES WAREHOUSE
This structure, located immediately west of the former DMV building, is an old warehouse covering some 7,000 sq. ft. The structure was one of three original buildings on the site and served as an airplane hangar in the past. Today it is used as a DLNR warehouse where maintenance equipment and boats and vehicles confiscated by DLNR are stored.

CHEMICALS, HAZARDOUS MATERIALS, AND HAZARDOUS WASTE
At the time of the survey, several hazardous materials and chemicals were identified, including lubricants, oils and cleaners, and at least one gasoline container. Also observed was a mobile welding unit of unknown type.

ASBESTOS CONTAINING MATERIALS
The structure consists primarily of corrugated metal sheeting over a steel frame skeleton. There is a possibility that a weatherproofing material that may contain asbestos was used on the corrugated sheet metal to improve its durability. Additionally, the roof of the structure may be made of a material known as Galbestos. Galbestos, used in the past on similar structures, has a corrugated appearance similar to that of corrugated sheet metal but contains asbestos to increase durability and longevity. This product has been used on warehouses of similar design and age in Hilo, Hawai‘i.

LEAD BASED PAINT
The entire structure featured shades of aged blue and green paint. There is a strong probably that these paints contain detectable amounts of lead.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT
No PCB containing equipment was observed at this location.

ARSENIC CONTAINING MATERIALS
No suspected arsenic containing materials were observed at this location.

6.2.9 IN-LINE HOCKEY RINK
The in-line hockey rink is located immediately west of Field D and at the eastern most end of the old Kona Airport runway. The regulation sized rink features fiberglass boards topped with plexiglass panels and a concrete playing surface. No chemicals, hazardous waste, or asbestos containing materials were identified at the rink.

Paint on the light posts, rails and benches on the south side of the rink may contain lead. The light fixtures may house PCB containing ballasts. Finally, the benches may have been made from treated lumber, which may contain significant amounts of arsenic.

6.2.10 EVENTS PAVILION

The Events Pavilion is a 14,400 sq. ft. facility located near the center of the parcel. The building is designed around a central space capable of holding large community events and includes a small stage along the west wall. On the perimeter of the building are a series of rooms, including two dressing rooms, an electrical closet, two storage closets, bathrooms, a kitchen and an office.

CHEMICALS, HAZARDOUS MATERIALS OR HAZARDOUS WASTE

Various chemicals and hazardous materials were being stored in the office and storage closets of the pavilion. These include cleaners, insect repellant/poison, brake fluid, motor oil and Draino. All substances were properly labeled and stored. All containers appeared to be in good condition, and no leaks were evident at the time of the survey.

ASBESTOS CONTAINING MATERIAL

Suspect asbestos containing material identified within the pavilion include vinyl floor tile of various colors (blue, green, brown, beige and gray), cove base and associated mastics, window and door caulking, acoustic ceiling tile and associated mastic, drywall joint compound, restroom tile grout, sink caulking and sink insulation. In addition, roofing materials such as mastics and flashing caulking may also contain asbestos.

LEAD BASED PAINT

Various painted surfaces throughout the pavilion may contain detectable levels of lead. This includes the primary beige paint found throughout the building, all interior wall and door paint, and the brown paint used on the exterior of the building.

POLYCHLORINATED BIPHENYLS (PCB) CONTAINING EQUIPMENT

Many of the rooms around the perimeter of the building feature fluorescent light fixtures. These fixtures may hold PCB containing ballasts.

ARSENIC CONTAINING MATERIAL

Much of the roof and gables appear to have been made of wood. Depending on the age of the wood, there is a strong possibility that the lumber used may have been treated. If this is the case, then significant amounts of arsenic may have infused into the wood during the treatment process and may therefore be present.

6.2.11 BEACH PAVILIONS

Several beach pavilions and public restroom facilities are located along the coastal border of the parcel. No chemicals or hazardous materials were found at any of these sites along the beach. Roofing components of the structures may contain asbestos, such as mastics and flashing caulking. Sink caulking and tile grout within the restrooms may also contain asbestos. It is possible that all painted surfaces may contain lead in the paint. This would include the picnic benches found at the pavilions. No PCB containing equipment was observed at the pavilions during the time of the survey.

If treated lumber was used in the construction of the pavilions, significant amounts of arsenic may be present. This is of some concern, as the condition of portions of the pavilions is very poor with clear evidence of rotting and deteriorating wood. This may allow the arsenic to leach out of the wood, if present, and lead to exposure to the general public.

6.2.12 PARK GROUNDS

A walk through of the park grounds was the final component of the site reconnaissance survey. During the walk through, KI personnel sought out evidence of illegal dumping of hazardous materials, storage of chemicals, or other items that may be an environmental concern. All accessible areas of the park were visually inspected, with particular attention paid to areas along the beach and in the culturally sensitive area at the northwest end of the park.

No evidence of illegal dumping of hazardous materials was observed on any part of the parcel. Some trash was noticed in the brush within the culturally sensitive area, including an abandoned full-sized mattress. On the northwest end of the old airport runway, an empty quart bottle of motor oil was found next to an oil stain, suggesting that a member of the general public may have performed an illegal oil change on a personal vehicle on County property.

It was also noted that a number of telephone poles have been used as a landscaping element to provide a border around the area leased to two canoe halau by the state. Telephone poles are often treated with creosote, a thick, oily liquid derived from coal tar, to help preserve the wood. Creosote has been listed as a probable human carcinogen by the International Agency for Research on Cancer (IARC). There has been some concern of the affects of creosote treated telephone poles on the environment, as creosote may leach from the wood and into groundwater over time. As a result, its use is slowly being phased out.

However, the telephone poles being used have been covered with a green paint. This paint, which unfortunately may contain detectable amounts of lead, will prevent the leaching of creosote into soil beneath the poles. It is recommended that the paint coating be regularly inspected and maintained to prevent the leaching of creosote into the environment.

Finally, a number of components used for traffic flow and control, such as gates, concrete barriers, and fences, have been painted to improve visibility. Often, these paints contain detectable amounts of lead.

6.3 NEIGHBORING PROPERTIES

During the site reconnaissance a visual survey of adjacent properties from public thoroughfares was also conducted. Much of the land immediately to the north of TMK 7-5-05: Parcel 007 is undeveloped. The only facility directly adjacent to the parcel on the north side is the Swing Zone Golf Course, which resides on approximately 11 acres across the street from the State DLNR Warehouse. The zoning of the land to the north of the parcel is divided into agricultural (A-5a) to the west and mixed commercial/industrial use (MCX-20) and the east. The division of the land bisects the Swing Zone Golf Course.

The land to the northeast of the parcel is zoned for general industrial use. Immediately adjacent to the Keuaokalani Gym parking lot is a natural gas and petroleum product provider. To the east of the parcel, the land is zoned for limited industrial use and holds a car dealership. To the southeast and south of the parcel, the land is zoned for residential use. Any hazardous material releases from any of these properties immediately adjacent to, and in the vicinity of, this parcel are addressed in Section 5.

6.4 HELCO TRANSFORMERS

During the site reconnaissance survey, thirteen (13) pole mounted transformers were identified on the property. In addition, two (2) vault transformers were also found on the property. An inquiry to the Hawaiian Electric Light Company, Inc. (HELCO), revealed that none of the transformers with readily identifiable serial numbers contained PCBs.

Eight of the 13 observed transformers did not have serial numbers, and testing information could not be found by HELCO. Because these transformers may predate the July 1, 1979 PCB prohibition date, it must be assumed that these transformers contain PCBs. A copy of HELCO's confirmation correspondence is located in Appendix F. However, none of the transformers were visibly leaking, and therefore KI does not believe that they currently pose an environmental hazard to the property.

7.0 INTERVIEWS

An interview with the following individual was conducted to obtain information about the property's history, use and surrounding area.

Mr. Ron Borkowski, District Recreation Supervisor, Kekuaokalani Gym

Mr. Ron Borkowski has been associated with the Kailua Park/Old Kona Airport Park/Maka'eo for the past 22 years. At the time of the interview he was serving as District Recreation Supervisor for the County, and oversaw many of the daily operations of the park and its facilities. He was also took part in the construction of Fields A, B and C, and worked to coordinate the construction of the three outdoor basketball courts east of the Kekuaokalani Gym. Mr. Borkowski described the construction of the three ball fields to the south of the gymnasium, and noted that they began with raw lava fields. Mr. Borkowski also acknowledged that the fields often have drainage problems, and believed that it was the result of the fields being built directly on top of the old airstrip. As a result, many of the fields have only about a foot of topsoil before the pavement is reached. He had also mentioned that the State of Hawai'i had transferred the title of Parcel 007 to Hawai'i County in December 0f 2008. In addition, Mr. Borkowski provided Kimura International with the following information regarding his prior knowledge of the subject property:

- They have no permits from the County, State or Federal Government for the operation of the facility.
- The sewer and water services are provided by the County of Hawai'i. All floor drains and restroom facilities are tied to the County sewer system.
- There are no sumps on the property. Cesspools did exist, but they were closed by the County "a few years back".
- There are no environmental liens on the property.
- There are no known underground storage tanks (USTs) on the property.

Mr. Borkowski did stress upon the efforts being made by park supervisors to provide an environmentally healthy and safe recreational facility for the Kona community.

8.0 CONCLUSIONS & RECOMMENDATIONS

Kimura International has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 for TMKs (3) 7-5-005: Parcel 007 and Parcel 083. Kimura International did not find evidence of gross contamination or illegal dumping of hazardous materials anywhere on site. While many of the facilities featured suspect asbestos, lead, arsenic and/or PCB containing materials, none of these materials posed an immediate environmental or health hazard at the time of the site reconnaissance. Based upon this fact, as well as a historical records review, it is Kimura International's opinion that a Phase II assessment is **not** warranted at this time.

However, Kimura International would like to offer the following recommendations for proactive environmental health and safety measures:

- The two 55-gallon drums of acetone in the canoe halau should be properly labeled and stored according to OSHA regulations (29 CFR §1910.106)

- The 55-gallon drum of unknown contents at the horseshoe pit should either be properly labeled and safely stored as required by their contents or removed from the premises.

- The telephone poles used as a border around the canoe halaus should be regularly inspected to ensure the creosote does not impact the soil.

- Wooden structures that may have been constructed with treated wood should be regularly inspected and maintained to reduce the risk of arsenic exposure to members of the public.

- If buildings on site are to be renovated or demolished, a comprehensive survey should be conducted to identify, quantitatively, all building materials containing asbestos, lead paint, arsenic, PCBs and other hazardous materials to ensure proper handling and disposal.

9.0 REFERENCES

- Environmental Data Resources, Inc., “The EDR Radius Map with GeoCheck,” Report Inquiry No. 2253828.2s, June 25, 2008.
- Macdonald, G.A., A.T. Abbot, and F.L. Peterson, "Volcanoes and the Sea." University of Hawai‘i Press, 1983.
- Mink, John F. and Stephen L. Lau, "Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawai‘i." May 1990.
- State of Hawai‘i Department of Health, Hazardous Evaluation and Emergency Response Office, HEER Records.
- State of Hawai‘i Department of Health, Solid and Hazardous Waste Branch, UST/LUST Records.
- State of Hawai‘i Department of Health, Solid and Hazardous Waste Branch, RCRA Facility Records.
- State of Hawai‘i Department of Health, Underground Storage Tank Program, "Technical Guidance Manual for Underground Storage Tank Closure & Release Response." March 2000.
- U.S. Department of Agriculture Soil Conservation Service, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawai‘i." 1972.
- U.S. Department of Interior Geological Survey, "Honolulu Quadrangle, 7.5 Minute Series (Topographic Map)," 1998.

Appendix A

FIGURES

Appendix B

EDR RADIUS MAP W/ GEOCHECK

Appendix C

PHOTOGRAPHIC DOCUMENTATION

Appendix D

TITLE GUARANTY OF HAWAI'I, INC. DOCUMENTATION

Appendix E

AERIAL PHOTOGRAPHS

Appendix F

HELCO INQUIRY

CULTURAL SURVEYS HAWAI'I

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES SINCE 1982

October 27, 2009

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Ms. Nancy McMahon, Deputy Administrator
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Subject: Submittal of a : *Literature Review and Field Inspection for the Kailua Park Master Planning Project Keahuolū and Lanihau Ahupua'a, North Kona, Hawai'i, TMK: [3] 7-5-005:007 & 083* (Simonson et al 2009) for Possible SHPD Consideration re: the Kailua Park Master Planning Project and any Cultural Resource Management at the Kailua Park (Old Kona Airport), Keahuolū and Lanihau Ahupua'a, North Kona, Hawai'i and in support of Section 106 as well as 6E review

Aloha Nancy McMahon:

On behalf of Kimura International and the County of Hawai'i, please find attached a copy of our draft *Literature Review and Field Inspection for the Kailua Park Master Planning Project Keahuolū and Lanihau Ahupua'a, North Kona, Hawai'i, TMK: [3] 7-5-005:007 & 083* (Simonson et al 2009)

This study was prepared for a Master Planning Environmental Assessment to comply with Chapter 343 as well as NEPA (in case they go after federal funds for any park improvements) and is being supplied as a background document for the possible reference of the State Historic Preservation Division in consideration of the Kailua Park Master Planning Project and any further cultural resource management work at the Kailua Park as may be indicated. Because of the possibility of federal funding this document is being supplied to support Section 106 as well as 6E review.

Sincerely,

David W. Shideler

David W. Shideler
Cultural Surveys Hawai'i, Inc.

LINDA LINGLE
GOVERNOR OF HAWAII

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BOARD OF LAND AND NATURAL RESOURCES
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CONSERVATION AND RESOURCES ENFORCEMENT
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January 6, 2010

Hallett H. Hammatt, Ph.D.
Cultural Surveys Hawaii
PO Box 1114
Kailua, Hawaii 96734

LOG NO: 2009.4060
DOC NO: 1001MD14
Archaeology

Dear Dr. Hammatt:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Literature Review and Field Inspection of 117 Acres with New Sites
Keahuolu & Lanihau Ahupua`a, North Kona District, Island of Hawai`i
TMK: (3) 7-5-005:007 & 083

This letter reviews the aforementioned report (*Simonson, Shideler and Hammatt 2009; Literature Review and Field Inspection for the Kalua Park Master Planning Project, Keahuolu and Lanihau Ahupua`a, North Kona, Hawaii TMK: [3] 7-5-005:007 & 083; CSH Job Code: KEAHUOLU 3*) which we received on November 2, 2009. We apologize for the delay in our reply. This document was prepared as part of the planning process for the Kailua Park Master Plan development.

This is a solid review of the current status and we have only minor revisions/clarifications requested (below). However, given the findings – that some sites could not be relocated, others have apparently been recently covered with mulch by grounds keeping crews, while new sites have additionally been located – and the lack of SIHP numbers for most of the sites, we recommend a full archaeological inventory survey be conducted in an effort to create a single volume incorporating past reviews and new findings. This is also necessary as a precursor to the recommended preservation and data recovery plans.

Please address the following in a revised version of this report:

- Page 22, 3.2, second paragraph needs clarification: "Four radiocarbon dates were determined for feature, which ranged…"
- Page 23, 3.2.1, the third paragraph from the bottom appears to be in contradiction with the final paragraph. The third paragraph indicates that sites may have been destroyed in the late 1940s, whereas the final paragraph appears to indicate that they were relocated in 1970.
- Page 30, 4.1, Table 2: Please correct "Orck Art."
- Page 35, 4.1.1, second paragraph has empty brackets for a citation.
- We recommend including signage (as represented in Figure 53) in both Hawaiian and English.

If you have questions about this letter please contact Morgan Davis at (808) 896-0514 or morgan.e.davis@hawaii.gov.

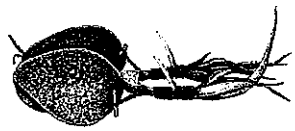
Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
and Historic Preservation Manager
State Historic Preservation Division

CULTURAL SURVEYS HAWAI'I

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES - SINCE 1982



February 2, 2010

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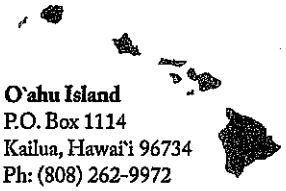

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Kona, Hawai'i
Lāwai, Kaua'i

Subject: Resubmittal of *Literature Review and Field Inspection for the Kailua Park Master Planning Project Keahuolū and Lanihau Ahupua'a, North Kona, Hawai'i, TMK: [3] 7-5-005:007 & 083* (Simonson et al 2010)

Aloha Nancy McMahon:

On behalf of Kimura International and the County of Hawai'i, please find attached a copy of our revised *Literature Review and Field Inspection for the Kailua Park Master Planning Project Keahuolū and Lanihau Ahupua'a, North Kona, Hawai'i, TMK: [3] 7-5-005:007 & 083* (Simonson et al 2010) resubmitted for SHPD review. Based upon the SHPD review letter (January 6, 2010; Log No 2009.4060; Doc No 1001MD14; copy attached) the following amendments to the report have been made:

1) Clarification of the radiocarbon dates from a previous survey (p.22, Section 3.2, second paragraph)
2) Clarification of 1970 study (p.23, Section 3.2.1, third paragraph from the bottom)
3) Correction of "Rock Art" typo in Table 2 (p.30, Section 4.1)
4) Insertion of missing figure reference (p.45, Section 4.1.1, second paragraph)
5) Added recommendation to have proposed signage in both Hawaiian and English (p.82, Section 5.1.6)

If you have any questions or comments, please feel free to call me at 262-9972 on O'ahu or toll free at 1-800-599-9962. You may also reach me by e-mail at dshideler@culturalsurveys.com.

Sincerely,

David W. Shideler

David W. Shideler
Cultural Surveys Hawai'i, Inc.

LINDA LINGLE
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

January 6, 2010

Hallett H. Hammatt, Ph.D.
Cultural Surveys Hawaii
PO Box 1114
Kailua, Hawaii 96734

LOG NO: 2009.4060
DOC NO: 1001MD14
Archaeology

Dear Dr. Hammatt:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Literature Review and Field Inspection of 117 Acres with New Sites
Keahuolu & Lanihau Ahupua`a, North Kona District, Island of Hawai`i
TMK: (3) 7-5-005:007 & 083

This letter reviews the aforementioned report (*Simonson, Shideler and Hammatt 2009; Literature Review and Field Inspection for the Kalua Park Master Planning Project, Keahuolu and Lanihau Ahupua`a, North Kona, Hawaii TMK: [3] 7-5-005:007 & 083; CSH Job Code: KEAHUOLU 3*) which we received on November 2, 2009. We apologize for the delay in our reply. This document was prepared as part of the planning process for the Kailua Park Master Plan development.

This is a solid review of the current status and we have only minor revisions/clarifications requested (below). However, given the findings – that some sites could not be relocated, others have apparently been recently covered with mulch by grounds keeping crews, while new sites have additionally been located – and the lack of SIHP numbers for most of the sites, we recommend a full archaeological inventory survey be conducted in an effort to create a single volume incorporating past reviews and new findings. This is also necessary as a precursor to the recommended preservation and data recovery plans.

Please address the following in a revised version of this report:

- Page 22, 3.2, second paragraph needs clarification: "Four radiocarbon dates were determined for feature, which ranged…"
- Page 23, 3.2.1, the third paragraph from the bottom appears to be in contradiction with the final paragraph. The third paragraph indicates that sites may have been destroyed in the late 1940s, whereas the final paragraph appears to indicate that they were relocated in 1970.
- Page 30, 4.1, Table 2: Please correct "Orck Art."
- Page 35, 4.1.1, second paragraph has empty brackets for a citation.
- We recommend including signage (as represented in Figure 53) in both Hawaiian and English.

If you have questions about this letter please contact Morgan Davis at (808) 896-0514 or morgan.e.davis@hawaii.gov.

Aloha,

Nancy A. McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
and Historic Preservation Manager
State Historic Preservation Division

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DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
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KAPOLEI, HAWAII 96707

August 12, 2010

Hallett H. Hammatt, Ph.D.
Cultural Surveys Hawaii, Inc.
PO Box 1114
Kailua, Hawaii 96734

LOG NO: 2010.0793
DOC NO: 1004MD26
Archaeology

Dear Dr. Hammatt:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Revised Literature Review and Field Inspection of 117 Acres with New Sites
Keahuolu & Lanihau Ahupua'a, North Kona District, Island of Hawai'i
TMK: (3) 7-5-005:007 & 083

This letter reviews the revised aforementioned report (*Simonson, Shideler and Hammatt 2010; Literature Review and Field Inspection for the Kailua Park Master Planning Project, Keahuolu and Lanihau Ahupua`a, North Kona, Hawaii; TMK: (3) 7-5-005:007 & 083; CSH Job Code: KEAHUOLU 3*), which we received on February 2, 2010. We apologize for the delay in our reply. This report was prepared as part of the planning process for the Kailua Park Master Plan development.

This is a solid review of the current status of the park. However, given the findings – that some sites could not be relocated, others have apparently been recently covered with mulch or dirt by grounds-keeping crews, while new sites have additionally been located – and the lack of SIHP numbers for most of the sites, we recommend a full archaeological inventory survey be conducted in an effort to create a single volume incorporating/updating past reviews and new findings. This is also necessary as a precursor to the recommended preservation and data recovery plans.

In our earlier correspondence we requested minor revisions (*Log No. 2009.4060, Doc No. 1001MD14*) which have been corrected. While this report does not qualify as an AIS pursuant to HAR §13-276, we will include it in our libraries for reference. Please submit a CD containing a searchable pdf to our Kapolei office so we can include it in our digital library.

If you have questions about this letter please contact Morgan Davis at (808) 896-0514 or via email to: morgan.e.davis@hawaii.gov.

Aloha,

Theresa K. Donham
Acting Archaeology Branch Chief
State Historic Preservation Division