Kona Kai Ola

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME 3: TECHNICAL APPENDICES

Kealakehe, North Kona District, Island of Hawaii

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Appendix C-1

Market Study, Economic Impact Analysis, and Public Costs/Benefits Assessment

By The Hallstrom Group, Inc.

Market Study, Economic Impact Analysis and Public Costs/Benefits Assessment of the Proposed

KONA KAI OLA COMMUNITY

Kealakehe, North Kona, Hawaii

THE HALLSTROM GROUP INC.
REAL ESTATE
CONSULTANTS
& APPRAISERS

October 23, 2006

Mr. Frank Brandt, Chairman
PBR Hawaii, Inc.
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Market Study, Economic Impact Analysis and Public Costs/Benefits Assessment of the Proposed Kona Kai Ola Community Kealakehe, North Kona, Hawaii

Dear Mr. Brandt:

At your request, we have completed a defined scope market study, economic impact analysis and public costs/benefits assessment of the proposed Kona Kai Ola community, a mixed-used marina-oriented project to be located on approximately 490 acres between the shoreline and Queen Kaahumanu Highway, southerly adjacent to the Honokohau Small Boat Harbor approximately four miles north of Kailua-Kona, Hawaii. The development will contain a variety of moderate density urban uses, including hotel, timeshare, commercial, marina, community and recreational facilities, within a master planned "destination" setting serving the growing tourist and resident populations of West Hawaii.

As currently envisioned, the project, will contain some 700 hotel rooms, 1,800 interval ownership units, a 800-slip marina expansion, 50 acres of commercial sites, eight acres of marina-supporting industrial uses, a marine science center, dolphin experience, yacht and fishing clubs, and a variety of parks and open space. Utilizing lands long-planned for urban in-fill within the Keahole-to-Kailua corridor, Kona Kai Ola will capitalize on the existing and forecast needs for additional berthing space in West Hawaii, fresh vacation opportunities in modern full-service projects, and new destination retail facilities.

The holding has superior frontage and access characteristics, an extensive oceanfront, proximity to the Kaloko-Honokohau National Historic Park, is mid-way between Kailua-Kona Town and the Kona Airport, and has upwards of 80,000 persons (tourists and residents) in its primary West Hawaii trade area. Beyond providing needed development to service a variety of sectors

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within the expanding West Hawaii visitor industry, it will offer a unique marina-oriented ambience, create thousands of new employment and business opportunities, generate billions of dollars in Big Island investment and commercial operations, and enhance the state and county tax base.

The focus of our assignment was essentially three-fold:

- **Market Study** -- To ascertain whether there is sufficient demand in the West Hawaii real estate market to successfully absorb the finished subject inventory in a timely manner given its characteristics and those of competing in-place and proposed regional development.

- **Economic Impact Analysis** -- To estimate the general and specific effects on the local economy which will result from the development of the Kona Kai Ola master-planned community, including construction and operating employment, wages and income, operational revenues, contractor/supplier profits, de facto populations, end-user expenditures, and other regional and islandwide monetary and employment effects.

- **Public Cost/Benefit Assessment** -- To quantify the impact on the public purse arising from the subject project in regards to primary tax/fee revenues which will be received by the State and Hawaii County due to the project's actualization, versus the implied cost of providing needed governmental services to the development.

The pertinent results from our studies are presented within the following summary report, containing tabular data and brief narrative regarding the salient components of our assignment. A series of addenda contain further discussion and statistics providing background and support to the report conclusions.

As part of our investigation program, we have inspected the subject property and its environs on numerous occasions; researched the West Hawaii hotel, timeshare, commercial, and marina market sectors; interviewed knowledgeable parties active in the study area economy; reviewed governmental statistics, policies and publications; accessed on-line databases; and compiled materials from public and private sources.

All conclusions presented herein are subject to the identified limiting conditions, assumptions and certification of The Hallstrom Group, Inc., in addition to any others set forth in the text. All work has been completed in compliance with the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice (USPAP).

We have reached the following conclusions as of September 30, 2006, regarding the probable market standing and economic impacts of the proposed Kona Kai Ola development:

- The subject property enjoys a favorable location within an expanding community requiring a variety of vacant urban lands to meet a wide spectrum of local resident and (particularly) tourist demands. It has superior mixed-use development potentials given its size, physical and market characteristics, and is among the most appropriate sites in the region for such uses; significantly being the only holding with marina

expansion and National Park support potentials. It has access to available infrastructure systems and the region's primary thoroughfare; and, strong visibility, frontage/exposure, and intercept/recognition characteristics.

- Based on market analysis, discussion with visitor industry professionals and observation, the greater Kailua-Kona region (from Keahole to Keauhou) demonstrates significant demand for new, upscale tourist-oriented uses. There is a necessity for "fresh" lodging, shopping and thematic destinations if the area is to remain competitive with other statewide locales with the focus being towards the northerly coastal development projects of West Hawaii; no new hotel inventory has been built in Kailua-Kona in decades, there has been just a single major timeshare project (off-water) in recent years; and little has been done to exploit the marketing potentials of the world-renown Kona fishery. Available tourist-oriented commercial space in Kailua-Kona is near full occupancy, with the general and resident sectors also presently strong. The subject marina-front village will be an intense, unique destination facility on the Big Island attracting tourists and locals, and the highway-fronting retail sites have excellent exposure, access and intercept potentials.

- The timeshare (or interval ownership) sector has been the fastest growing segment of the transient lodging market in recent years, with several hundred new (or converted) units being added annually statewide. The total number of units at year-end 2005 according to State figures was at 6,839, up more than 15 percent from the prior year. The number of tourists using timeshare accommodations has shown major gains, increasing from 6.75 percent of visitors in 2002 to over nine percent in 2006. Timeshare units have higher occupancies than hotels, users enjoy longer stays, and feel more a part of the community than other travelers, and have spending levels approaching/at typical visitor levels. The Big Island lags behind Maui and Kauai in regards to the number of existing and proposed units, and quality of the new inventory offered. There is substantial unmet demand for new product in Kona, and we estimate the 1,800 timeshare units proposed for Kona Kai Ola would be absorbed in about 15 years if a variety of price and competitive unit types were made available.

- It has been a decade since the last major new hotel was constructed in West Hawaii, and since that time visitor arrivals are up by nearly 50 percent and total visitor nights by almost 30 percent. The economics of the industry (value relative to costs) have strengthened measurably in recent years and there is renewed interest in facility development. However, there are few vacant sites remaining on the leeward coastline, and scarcer still which would support a modern, upscale project capable of achieving room rates competitive with the Kohala hotels. We estimate the 700 Kona Kai Ola hotel rooms would require six to ten years to be absorbed, with build-out expected in about seven years from completion of the community's infrastructure.

- The marinafront commercial village of Kona Kai Ola will be a unique destination facility sure to attract large numbers of regional visitors and residents, and undoubtedly become a major thematic attraction similar to Whaler's Village at Kaanapali. The demand for the development opportunity will be substantial, as will the interest in finished space. We anticipate the village will be one of the initial constructions, and that it will be fully leased-up within 12 to 18 months of completion.

- The resident and de facto populations of West Hawaii are forecast to increase by upwards of 50 percent over the next two decades, creating a demand for an additional two million square feet of leaseable floor space and 230 gross acres of development lands. While there are significant vacant holdings in the greater Kailua-Kona area, the subject highway-front lands will possess several competitive advantages which will enable them to achieve absorption in a reasonable term. In addition to extensive exposure/frontage and relative ease of access from Queen Kaahumanu Highway, it will hold an "intercept" position for all southbound traffic along the highway going into Kailua-Kona, making it the most accessible major project(s) to all residents and tourists between Kaloko and Kawaiahae. We estimate the 50 acres of highway-fronting commercial sites (supporting some 400,000-plus square feet) will be absorbed within nine years from project infrastructure completion. The "residents" of the Kona Kai Ola community alone will create an on-site demand for some 150,000 square feet of floor space.

- The demand for marina berthing in West Hawaii is acute, and has been for more than a generation. The near-shore waters are considered among the best for sports fishing in the world, and offer excellent recreational, scenic and cruising opportunities. The waiting list for slips at the Honokohau Marina abutting the subject lands currently stands at 146 persons (effectively at its maximum limit), which equates to a roughly 15 to 20 year wait, at a minimum. Another 150 to 300-plus persons would in a brief period lease slips were they made available in the area. Apart from some limited expansion potentials at Kawaihae Harbor, some 25 miles north and on the outlying edge of the primary market sphere, there are no plans being forwarded to meet the expressed berthing needs of West Hawaii. The success of the Ko Olina Marina (Oahu) demonstrates the ability of a modern, comprehensive, market-priced facility to attract large numbers of boaters. We forecast the 800 slips within the Kona Kai Ola marina will be absorbed in approximately 12 years from initial offering. The adjacent 8.0 acres of marina-supporting industrial lands will also be built-out and the finished space/sites absorbed within the same period (and likely sooner, say, within three to six years).

- The construction and "operation" of the Kona Kai Ola community will create some 67,848 "worker years" of direct on- and off-site employment in West Hawaii generating $2.26 billion in wages over the initial 18-year build-out and absorption period. The end-user hotel, timeshare, retail/commercial, marina and other businesses will house 5,108 permanent jobs in the regional economy and $151.3 million in annual wages on a stabilized basis. Construction of the project will infuse nearly $2.2 billion of direct costs into the local economy and generate more than $300 million in profits for local contractors and suppliers. The on-going businesses will total $557.6 million in taxable sales annually, stabilized. The de facto guest/interval owner population of the project will be about 5,321 persons at build-out, with none being students of local schools, and have total annual expenditures of $333.7 million into the local economy.

- The State of Hawaii will receive more than $660.9 million in taxes and fees from the project during the 18-year study projection period, and an additional $48 million annually thereafter. Hawaii County will receive some $256 million in taxes during the construction and initial operational time-frame, and $22.2 million per year following. Even with making generous allowances for the public services required by the project guests/owners, users and businesses, the level of governmental expenses is far less than tax proceeds. Overall, the net benefit to the state would be $333.5 million for the first 18 years, and $11.4 million annually thereafter; and at $187.4 million total and $14.5 million annually for the county, respectively. In no year during the study period does either the state or county suffer a revenue shortfall (costs exceeding receipts) due to the project.

It is our conclusion there is sufficient market demand for the proposed Kona Kai Ola product; it will produce substantial resulting regional economic impacts, and be a major benefit to the public purse.

We appreciate the opportunity to be of service to in regards to this unique and dynamic holding. Please contact us if further discussion or detail is required.

Respectfully submitted,

THE HALLSTROM GROUP, INC.

James E. Hallstrom, Jr., MAI, CRE

/as

THE HALLSTROM GROUP INC.
REAL ESTATE CONSULTANTS & APPRAISERS

Market Study, Economic Impact Analysis and Public Cost/Benefit Assessment of the Proposed

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to be located at

Kealakehe, North Kona, Hawaii

Prepared for

Mr. Frank Brandt, Chairman
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October 2006

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Introduction

The first step of our assignment was to complete a defined-scope **market study** of the proposed Kona Kai Ola community, a mixed-use development to be located on approximately 490 net acres stretching from the makai frontage of Queen Kaahumanu Highway to the oceanfront, adjacent to the Honokohau Small Boat Harbor, mid-way between the Kona airport and Kailua-Kona town, North Kona, Hawaii.

The goal of the market study was to quantify the demand within the West Hawaii region for the various uses proposed in the Kona Kai Ola master plan, determine if the there is market support for the subject product, and estimate the speed of "unit" absorption for the primary saleable components (hotel, timeshare, commercial/retail, and marina).

Building upon these conclusions, the second step of the assignment was to complete an **economic impact analysis** model depicting the capital creation, job growth, and business expansions which will result during the "lifespan" of the community as it moves from infrastructure emplacement, to build-out and operating stabilization.

The de facto guest/interval owner population and their expenditures were also estimated, as well as the overall monetary effects in the regional and islandwide economies.

The final step in the assignment was to translate the economic models into a **public costs/benefits assessment** quantifying the amount of primary tax revenues the State and County can expect to receive during the initial development period and over the extended term on an annualized basis. Real property, state income, gross excise, and transient accommodation taxes and their flow over time were the focus of this section.

The results were compared with the costs of providing public services to the community on both an estimated "actual" and effective "per capita" basis according to the de facto population.

The pertinent results of our study are summarily presented in 11 sections, as shown below. Further background data, source material, statistics, and narrative detail is contained in the Addenda.

1. **Primary Conclusions**
2. **West Hawaii Regional Overview**
3. **State and Big Island/West Hawaii Tourism**
4. **The Proposed Kona Kai Ola Community**
5. **The Regional Timeshare Market Sector**
6. **The Regional Hotel Market Sector**
7. **The Kona Commercial/Retail Market Sector**
8. **Demand for Additional Marina Product**
9. **Subject Appropriateness and Absorption Conclusions**
10. **The Economic Impacts of the Proposed Community**
11. **Public Costs/Benefits Resulting from Development**

Primary Conclusions

Our subject product absorption conclusions are summarized on Table A. We forecast it will require circa 15 years for all of the proposed inventory to be fully absorbed following completion of a three-year infrastructure emplacement and initial product construction phase, although all of the components other than the timeshare inventory will have shorter absorption period.

The total development period, from ground breaking until the last timeshare interval is sold, is estimated at 18 years. Our economic models reflect all the timeframes.

Our estimates of economic impacts and public costs/benefits are summarized on Table B. The impacts are substantial, and public coffers will enjoy a "profit" during every year of the development and operation of the community.

West Hawaii Regional Overview

The West Hawaii Economic Market Sector, which stretches along the leeward coast of the Big Island from the North Kohala through South Kona Districts, has evolved significantly over the last two to three decades, creating a vibrant, urbanized, freestanding economy that will continue to generate increasing demand for a wide range of land use types over the long-term.

At present the primary study area has a resident population of some 62,160-plus persons, and hosts another 18,949-plus visitors daily on average. Over the next 20 years, each of these figures will grow

between 52 and 85 percent, resulting in a de facto population in West Hawaii of 143,785 persons by 2025 (mid-point estimate).

The majority of private capital invested in Hawaii County of late has been focused towards West Hawaii's coastal development communities, resident housing construction in the existing towns, and in the industrial/commercial districts of Kailua-Kona (particularly its northerly reaches).

Much of the continuing expansion of urban Kailua-Kona will occur in the corridor between Kailua-Kona and the Kona International Airport, from the shoreline to the mauka forests.

The lower elevations, encompassing the Kona Kai Ola property, will continue its transformation into the central mixed-use core of West Hawaii containing a vast array of uses including transient, industrial/commercial, civic/public, and residential, along with large park/conservation areas along the ocean. The upland elevations will continue to be primarily residential.

While there has been fall-off from the record levels achieved by some market sectors last year, 2006 will still be among the best ever for West Hawaii, and continue the general overall upcycle which began late last decade.

The economic, demographic and real estate trends are highly favorable in the primary study area over the coming two decades; the period during which the subject community would be developed.

Further narrative discussion and background data regarding the subject study area is presented in Addenda Exhibit I.

State and Big Island/Kona Tourism

Tourism in Hawaii has recovered strongly since the September 11th, 2001 terrorist attacks, which interrupted a gradual and extended upcycle that peaked during the prior year. Demonstrating the strength of the island visitor industry, the market quickly rebounded and continued to grow through 2005, with total arrivals up seven percent from the prior year, reaching an all-time high of 7.38 million. Records were also achieved in regards to total visitor days (67.1 million) and total visitor expenditures ($12.75 billion). As more people are

spending more days and more money in Hawaii, the tourism industry must be considered healthy.

The statewide industry has continued strongly through August of this year, with arrivals and total visitors days up again (nominally), and expenditures up by more than four percent.

The neighbor islands have been the biggest recipients of the recovery and upward trends, all showing growth during the past four years, with the Big Island experiencing substantial gains during the last three. Hawaii County arrivals were up 16.7 percent in 2005 to a record 1.49 million persons, and are expected to be up another 6.5 percent for 2006 based on data through September.

There were a record 9.8 million visitor days spent in the County last year, up 16.6 percent from 2004, and visitor expenditures were also at all time highs totaling almost $1.9 billion. These figures are expected to be achieved/surpassed again this year.

It is estimated that upwards of 93 percent of Big Island tourism is directed to West Hawaii, a figure anticipated to continue climbing as further visitor interest drives development in the study area, while other locales further age or remain minor destinations.

Kona and Kohala hotels have experienced full-recovery since 9/11, with major gains in 2005 moving them to all-time marks. Although the subject will be within the Kona market geographically (an area in need of fresh upscale hotel development), we consider the Kohala coast hotels as being the most comparable/competitive to the proposed subject inventory. Among these hotels, ADRs are at $299.28 through August 2006, up more than 13 percent and $35 from a year prior. These rates are the highest mark on record for the Kohala sector, and surpassed statewide only by the Wailea/Makena area of Maui.

Occupancy averages for Kona and Kohala hotels are at 75 and 72 percent, respectively, just off from last year's level. Profit margins for first class and luxury hotels in West Hawaii are meaningfully up across the board over the past four years, several points above statewide average growth.

Expectations are for general gains in tourism of two to four percent for year-end 2006 over 2005, with growth of another two to four percent

in 2007, followed by a more modest one to two-plus percent on average thereafter.

The Hawaii visitor industry can be considered healthy over the mid to long-term if stable to increasing numbers of visitors are arriving, the total number of visitor days gradually escalates, spending outpaces inflation, and hotels show long-term ADR growth and consistent occupancies. Such conditions have generally prevailed in Hawaii for many years, and in West Hawaii (particularly since 2003), despite the short-lived post-attack setbacks.

On an overall basis, statewide and regional tourism trends are supportive of the proposed subject development.

Addenda Exhibit II contains tourism industry statistics for the State of Hawaii and the Big Island, and hotel industry trends for the state and Kohala (the competitive sector for the subject development). A detailed overview of master planned development to date from Keauhou to Mauna Kea Beach, encompassing the Kona Kai Ola site, is also presented in the exhibit.

The Proposed Kona Kai Ola Community

The subject property and proposed master plan are described at length in the publications by others contained in the Draft Environmental Impact Statement.

From a market perspective, the key issues are scale, intensity, use types, orientation/theme, and amenities:

- Kona Kai Ola will be spread over 490 net acres; this is of sufficient size to support a major master planned mixed use development. It will be a moderate to large project with more than 2,500 total units/rooms and major ancillary/supporting facilities.

- There will be a diversity of use types, including 1,800 timeshare units, 700 hotel rooms, an 800 slip marina with supporting industrial area, 500,000 square feet of commercial/retail space, and numerous operating community elements.

- The strong marina orientation of project will be unique to Hawaii and highly suitable for its location. In addition, the development will have an extensive shoreline; a critical attribute for successful coastal development in the islands.

- Supplementing the marina and helping create a unifying theme, the project will contain a marine science center, dolphin experience, two marina-front clubs, several improved waterfront and interior parks, community and cultural centers, pathways and open space.

The master plan of the proposed subject community is appropriate for the region in which it is located, competitive with other leading projects in the state, and sufficiently comprehensive to provide a destination experience. The water-based theme of Kona Kai Ola is founded on the primary attraction and demographic traits of Big Island tourism, and will work well in conjunction with the adjacent National Historic Park, which is centered around three oceanfront fishponds.

The master plan being proposed is representative of a highest and best use for the holding (given the inability to include a residential component by the ground lease).

The Regional Timeshare Market Sector

The timeshare, or interval ownership, sector has become an increasingly major component of the Hawaii tourist and resort industries over the past decade. Significant additions have been made to the statewide inventory during this time, with some 2,727 "new" units registered since 2000, and thousands more are under construction/proposed. Maui and Kauai have been the primary locations for the recent construction and sales surge.

The purchaser/user demographics of timeshare owners is expanding into a much broader appeal, stimulating the upward movement in unit quality. Many of the mid to upper income buyers now view timeshare as a reasonable cost option to purchasing a multi-million dollar "luxury" unit which may be rarely used and have substantial on-going holding costs. The Asian visitor (specifically Japanese) is viewed as having major impacts on the industry in coming decades.

The West Hawaii sector has been limited due to lack of supply, which has remained relatively static of late with few new additions,[1] as there are scarce oceanfront sites available/suitable for the typically higher-quality product of recent years, and as developer's have focused their efforts elsewhere in the islands.

Some 22,800 intervals were sold in the islands during 2005 with gross receipts approaching $550 million. This equates to a demand for about 450 "whole" timeshare units annually, up more than 56 percent from the levels of five years ago. New-product weekly intervals now sale from in the low $20,000s (for a moderate/first class quality interior project) to above $60,000 (for luxury oceanfront clubs). Three and four-week long fractionals are fetching up to $400,000 in some exclusive offerings.

It is projected the total demand for intervals will grow by four to eight percent per year over the near- to mid-term, reaching above 30,000 intervals and nearing 600 units annually statewide by 2010, with moderate increases over the subsequent decade, and stabilization over the long term at about 38,000 intervals and 745 units per year demand. This is assuming fresh, competitive product is made available and international sales programs remain in-place.

Limited new timeshare inventory is under-construction or proposed for West Hawaii at this time, with major projects including: a 90-unit expansion of the Grand Hilton Vacation Club on the interior golf course at Waikoloa Beach Resort; the final build-out the Fairfield Hawaii – Kona project (also off-water), and the possible conversion of the aging 460-room King Kamehameha Hotel. Marriott is also planning to pursue timeshare on/near is Waikoloa Beach hotel property.

However, with the possible exception of the Marriott, the proposed units will not have the attributes necessary to be competitive with the top-flight units in Maui or Kauai, and will be unable to capture the on-water, upper-end segment that is driving much of the industry growth.

(1) State-compiled timeshare unit totals showed a substantial increase in the number of Big Island units from 2004 to 2005, moving up nearly 19 percent to 1,592 units. However, the calculations are in error, with the true actual increase being less than 10 units. This is due to the state figures double-counting a project that changed ownership (Fairfield Royal Seacliff) and mistakenly including the units in a project (Kona Surf and Racquet) that has only a small portion used for timeshare.

Unlike the other neighbor islands which provided for dense oceanfront hotel development within major resort communities, West Hawaii has evolved into low-density, upscale areas with limited hotel rooms and more of a residential focus for shoreline properties.

To date, the primary study region has not meaningfully captured the available timeshare opportunities evidenced elsewhere in the State, but could readily support a spectrum of product commensurate with the overall sector. And, for West Hawaii tourism to achieve and maintain a competitive level of desirability within the entire visitor market, it must provide quality timeshare opportunities, or risk lagging behind as interval owners/guests become a larger segment of the overall tourist demographic in the islands.

We estimate the West Hawaii sector during the near to mid-term is capable of absorbing up to 10,000 and 15,000 intervals (or 200 to 300 full units) per year assuming competitive inventory is built, with a demand for some 1,500 to 2,500 total units over the next decade (mid-point), and 4,000-plus units by 2025.

Major vacation clubs expect to achieve annual sales of 2,500 to 5,000 intervals, or 50 to 100 full units for a single project, given competitive product and off-site marketing programs.

By offering both oceanfront luxury and interior moderate/first class units, Kona Kai Ola could maximize its potentials and dominate the West Hawaii sector, with interval sales equivalent to 100 to 200 full units of inventory annually, averaging 150 units. The 1,800 subject units would therefore require about 12 years of sales to achieve full-absorption.

Historic and projected sales data statewide for the study region and selected major projects is contained in Addenda Exhibit III, Tables III-1 and III-2.

The Regional Hotel Market Sector

Both the "visitor arrival" and "length of stay" statistics for West Hawaii have increased over the past two decades, with on-going (though lessened) gains projected over the long-term. This will result in a growth of one to two percent annually in the total number of "visitor days" .

The expanding visitor industry will require significant numbers of new lodging units to house the escalating West Hawaii tourist population. The mid-point demand for additional units can be summarily quantified as follows:

Average West Hawaii Tourism Population Today	19,000
Projected Tourism Population 2015	23,500
Gain in Visitor County	4,500
Divided by Average Party Size (Persons)	1.9
Base Additional Lodging Unit Demand	2,368
Divided by Effective Occupancy Rate	.75
Effective Additional Unit Demand by 2015	**3,157**

Average West Hawaii Tourism Population Today	19,000
Projected Tourism Population 2025	28,785
Gain in Visitor County	9,785
Divided by Average Party Size	1.9
Base Additional Lodging Unit Demand	5,150
Divided by Effective Occupancy Rate	.75
Effective Additional Unit Demand by 2025	**6,867**

Whether these levels of new accommodations are achieved will depend on numerous variables, specifically limitations to supply resulting from an availability of sites across the economic spectrum from moderate to luxury class. And, not all of this demand will be oriented towards hotel development.

Timeshare intervals, visitor condominium units and (to a much lesser degree) single family homes will each capture a share of increased primary sector lodging unit demand; however, a meaningful portion will still be directed towards hotel rooms. Further, the long-term vitality of the West Hawaii tourism industry requires periodic additional hotel inventory to keep the area fresh and in the forefront of world-wide destinations. This is particularly true in greater Kailua-Kona (encompassing Kona Kai Ola), which has a lesser-quality and aging hotel plant.

Hotels currently capture about 60 of the total lodging sector on the Big Island, and almost 50 percent of total room nights. We anticipate this market share will drop over the mid to long-term as more timeshare product is introduced, but will remain above 40 percent of the total West Hawaii room nights on an extended basis.

This level of demand will create the need for between 1,500 and 3,000 competitive new hotel rooms in the study region over the coming 20 years (an average of 75 to 150 units per year); and perhaps more if the King Kamehameha is converted to timeshare use.

Development opportunities are limited. There is a single vacant hotel site in the Keauhou Resort, one at Waikoloa Beach Resort, and an interior central Kailua-Kona hotel has also been proposed. These properties will be insufficient to meet anticipated hotel room needs.

Kona Kai Ola would capture a majority of total regional demand, based on its availability of three competitive waterfront sites (one shoreline, two marina-front), and its central location. We estimate subject demand/absorption will average about 100 hotel rooms per year during build-out of the community; or about seven years total for the proposed 700 rooms.

Optimum construction of the hotels would correspond to the anticipated timing of on-site demand.

The Kona Retail Market Sector

There is an estimated 2.3 million square feet of commercial-oriented floor space in West Hawaii at the present time, with just over 80 percent (or 1,850,000 square feet) located in greater Kailua-Kona. This represents a more than doubling of the regional total of two decades ago and a more than three-fold increase in Kailua-Kona.

The sites near Henry and Palani Roads in central Kailua-Kona, and the Kailua-Kona to Keahole corridor have been the locations for most of the new projects over the last 10 to 15 years, totaling an estimated 800,000 square feet. The six mile stretch from Henry Road to the Kohanaiki Business Park is now the core for general and resident-oriented commercial uses in the study area.

The tourist-oriented sector remains focused on the stretch of Alii drive between the King Kamehameha and Royal Kona hotels, with several new projects added over the last decade-plus.

Growth in the local population, tourist counts, and general economy will create a demand for an additional 2.4 million square feet (mid-point) of commercial/retail space by 2025, or about 230 gross buildable acres. Most of this will continue to be placed in the northerly areas of greater Kailua-Kona.

There are significant existing and proposed commercial-potential development lands in the K-to-K corridor, totaling several hundred acres, although increasing traffic and lesser intercept potentials hinders the desirability of the more interior/central portions. The common use of light industrial-zoned lands (which comprise another several hundred acres) for commercial uses further contributes to the large amount of available supply for the general and resident-oriented segments.

The supply of tourist-oriented commercial/retail sites is much more limited. Most available, competitive parcels on Alii Drive in central Kailua-Kona have been developed, and the area has significant traffic/access and parking problems. The northerly coastal resorts have generally built modest stores/centers primarily intended to serve a portion of their own community needs and not as "destination" development which would attract other regional tourists.

For the subject commercial sites, we forecast:

- The Marina Village component of Kona Kai Ola will not only be the thematic and shopping/dining center of the proposed community, but will also attract large number of non-subject tourists and regional residents. Its unique features, theme and environment will allow it to be an upscale destination complex on a par with Whaler's Village and The Shops at Wailea on Maui; a type and scale of product currently not found in West Hawaii. We estimate the 100,000 square feet of floor space would be fully leased within 12 to 18 months of the project's completion.

- The three highway-fronting commercial development pods have the necessary characteristics to be highly competitive in the greater Kailua-Kona general and resident sectors despite

the huge volume of inventory proposed for the region. The subject sites will have superior frontage/exposure and access traits; a prime intercept location for the some 30,000 vehicles passing by on the highway daily, and be readily available to the commuting workers of the northerly resorts. They will also be accessible from a major mauka/makai connector (Kealakehe parkway) and used by the 5,321 guests in the subject community. We anticipate a demand for circa 50,000 square feet of highway-fronting retail/commercial floor space per year on average in Kona Kai Ola until build-out is achieved, with about eight total years required for full absorption of the floor space built on the sites.

Commercial space demand projects for the study region in gross leaseable area and gross development acreage are presented in Addenda Exhibit III, Tables III-3 and III-4.

Demand for Additional Marina Product

West Hawaii has a long-established reputation as one of the world's finest sports fishing areas, and fishing/boating are deeply entrenched in the local culture and among residents. Public marinas have been woefully unable to meet the demand for berthing, resulting in the need for substantial "dry land" storage or boaters having to ramp launch their vessels at every use.

Further, the lack of marina development has resulted in the inability of the regional tourism sector to exploit the standing of the area via competitive, themed projects. Despite the marketing efforts to harness this potential segment, it remains on the periphery for most visitors; known about but basically unseen and unenjoyed.

Several plans for private marinas have been forwarded over the past two decades, including at Kohanaiki and Mauna Lani. But the environmental hurdles of "breaking channels" into the ocean have been considered too difficult to overcome and plans were abandoned, despite the evident interest by the market.

At present there are 146 persons on the waiting list for slips at Honokohau Small Boat Harbor (northerly adjacent to the subject), a minimum 15 to 20 year wait. And, there are several hundred others who have expressed interest but not bothered to join the interminably

long list. The harbor has been full and the waiting lists near capacity since the early 1980s.

Then (1980), there were 27,518 residents in West Hawaii and a daily count of 5,583 tourists, resulting in a de facto population of 33,101 persons. This was sufficient to fill Honokohau marina and the waiting list; a total of 400 positions (263 slips plus 140+/- on the waiting list). This is equivalent demand of one berthing opportunity for each 82.8 persons.

Application of that level of demand to the current de facto population of circa 84,000 equates to a need for 1,014 berthing opportunities, or nearly four times the number of existing (and 751 new) slips. This figure will increase another 722 slips by 2025.

Other regional berthing facilities are highly limited, also fully occupied, and less desirable. The only major potential increases in slips would be in Kawaihae Harbor, but that long-planned project has been pursued only slowly by the state, is not expected to be finished in the near to mid-term, and is 28 miles from central Kailua-Kona; many miles north of the central demand location.

Kona Kai Ola, by working in conjunction with the State and utilizing the existing Honokohau boating channel, will be able to provide up to 800 new slips into the heart of the primary greater Kailua-Kona (residential) and the coastal resort corridor (tourist) markets. It is in the location considered most desirable by boaters/fishermen, and will build on the exceptional success of the existing, adjacent marina.

The ability of the Hawaii boating community to embrace a new upscale private marina and the resulting higher slip rental rates, has been strongly demonstrated by the Ko Olina Marina (Oahu), which has been able to achieve rapid slip absorption despite charging rents equivalent to the upper-end of the West Coast marina spectrum.

We forecast the 800 subject marina slips would require approximately 11 years to reach full absorption after completion of the basin and moorage infrastructure; or an average of 73 slips per year. However, it is anticipated about half the slips would be spoken for in the first three-plus years.

The eight acres of marina supporting light industrial sites is expected to be absorbed in concert with marina lease-up. Initially utilized as

open "yard" uses during the first phase of marina development, with the 20,000 square feet of improvement space being built and occupied during the second phase of marina berthing construction.

Addenda Exhibit IV contains a series of detailed tables presenting existing marina and moorage locations available in West Hawaii and statewide (public and private), and from selected West Coast facilities.

The ability of a marina to create demand for nearby supporting "light industrial" uses was strongly demonstrable at Honokohau with the opening of "Gentry's Kona Marina" in 1984. The 4.08-acre site, with 31,000 square feet of gross leaseable floor area, project was quickly leased-up upon completion more than two decades ago in order to service a 263-slip marina. An 800-slip expansion, as proposed in Kona Kai Ola, would create proportionate demand for up to 12 acres and 90,000-plus square feet of space. The scale of activity in the subject project will further enhance demand.

Subject Appropriateness and Absorption Conclusions

From a market perspective, the subject site is a good to superior property for undertaking a major visitor community.

- The holding is of sufficient size and dimension with favorable topography to support a large scale, mixed-use development. It is on the primary thoroughfare for the region, with access to necessary existing infrastructure systems.

- It has an extensive ocean frontage and is adjacent to the major marina facility in West Hawaii, which will provide the focal theme of the project. It is highly proximate to the Kaloko-Honokohau National Historic Park, and within four miles of the Kona Airport and central Kailua-Kona.

- It is within a rapidly urbanizing market zone (the Keahole to Kailua-Kona Corridor) planned by the State and County to contain much of the next generation of greater Kailua-Kona growth. There is tremendous on-going expansion within the effective trade area, and the subject enjoys an excellent intercept position.

- There site has a desirable arid, generally calm, leeward climate; and panoramic views of the open ocean, the northerly

Kona shoreline, and the westerly flanks of Hualalai. The wastewater treatment plant southerly adjoining the mauka portion of the holding is a negative attribute, but can be mitigated to lessen any deleterious effect through buffering and appropriate nearby uses.

Based on the attributes of the subject property, the demand/supply indicators in the various market sectors studied, and the historic experience of other projects in the regional marketplace, we estimated the probable absorption velocity for the "saleable" components of the Kona Kai Ola master plan using three methodologies:

Basic Demand/Supply Comparison -- This straight-forward technique assumes that if there is insufficient existing and planned supply to meet projected market gross demand levels during the projection period, the proposed subject project will be absorbed in a reasonable manner, regardless of competitive qualities, as there are no other alternatives available.

This technique provides highly favorable results for the marina, hotel and timeshare uses, for which there is strong and escalating demand and limited or no supply during the projection period.

The Residual Method -- In this technique the major approved/proposed projects for each subject use type are placed on a time-line depicting the absorption either anticipated by the developers or assuming a reasonable market share. To the extent these proposed projects and the remaining existing supply fall short of the forecast demand in the study region or exceed the total, a respective undersupply or oversupply situation is present.

Having accounted for all of the proposed inventory in the market, it can be asserted the subject development will capture a significant portion of any residual demand. This approach is generally conservative, as it assumes the subject will capture only what is left over after all other projects garner their share. Given the nature of the subject holding we believe it could be a regional market leader, not a follower.

Being a more time-sensitive application of the preceding methodology, the results are generally similar. However, this

technique allows a correlation of demand/supply trends with the probable timing of the subject inventory, indicating "gaps" in supply or periods of oversupply. In addition to echoing significant need for the hotel, timeshare and marina components, this indicator also shows more support for the subject retail commercial offerings.

The Market Shares Method -- This approach accounts for the probable competitiveness of the subject inventory regardless of the total level of product being otherwise offered on the market. In essence, it is an estimate of how much of the total forecast demand in West Hawaii the subject could expect to achieve on an annualized basis in light of its locational, pricing and amenity characteristics.

Generally moderate in application, this technique tests "pure" competitiveness and is considered the classic methodology, for determining market absorption of a given product. However, it does require subjective selection of "capture rate" factors.

This application generally results in similar to slightly more favorable results for most proposed subject inventory relative to the prior two methods. Most critically, it is highly supportive for the retail/commercial product: the marina village, which will be a unique and unrivaled destination shopping and dinning experience; and the highway-fronting properties, which will have superior frontage/exposure, access and intercept potentials.

Our subject absorption estimates were typically based on mid-point demand forecasts, and were summarily presented on Table A (foregoing). Absorption could range from one to several years either shorter or longer for the various uses in accordance with market cycles.

Exhibit V contains the tabular applications of the market shares and residual methods to the saleable subject project components (as applicable).

The Economic Impacts of the Proposed Community

- Our economic impact analysis, presented in detail within Exhibit VI, utilizes the same 18-year development timeframe

depicting the evolution of the Kona Kai Ola site from its current condition of barren lava with nominal economic benefits into a comprehensive, built-out, fully operational, mixed use community.

As the project is actualized according to the following timeline, its impact on the regional economy will increase until reaching stabilization after full absorption and "occupancy".

Development Period	Development Actions
Years 1-3	Community infrastructure is emplaced, including utility systems, roadways, parks, features and support facilities. Initial timeshare, hotel, marina and marina village are also built.
Years 4-16	Occupancy of initial product begins in Year 4. Additional phases of lodging, timeshare, marina, retail and other uses constructed, with built-out complete by end of Year 16.
Years 17-18	Absorption of final timeshare units is achieved; all other uses will have been fully absorbed by this time. By end of Year 18, Kona Kai Ola is fully marketed and operating at stabilized levels.

- The total direct capital investment into the property will be some $2.2 billion, along with hundreds of millions of dollars in additional "soft" and contingency costs. Local contractors and suppliers will reap an estimated $219.8 million and $84.4 million in profits from the development, respectively.

- Some 67,848 "worker years" will be created during the initial 18 years of community development and operation, with total wages of $2.26 billion. Some 8,730 of the worker years will be associated with on-site construction; another 43,643 in on-site hotel, timeshare, retail, marina-related, and common element positions; and contribute to an equivalent of 16,835 off-site jobs. After build-out, the project will have 3,841 permanent

on-site jobs and contribute to another 1,267 off-site, with total annual wages of $151.3 million in current dollars.

- The project will begin being populated by interval owners/guests and hotel guests in Year 4 of development. Growing from a daily average of 547 persons that year to a stabilized total of 5,321 persons when build-out and stabilization are reached by Year 18. They will spend an estimated $2.9 billion during the absorption period, and an annual average of $311.2 million thereafter. There will be no permanent residents or school-aged children.

- At stabilization, the operating businesses at Kona Kai Ola will generate an estimated $557.6 million in annual gross sales; of which roughly 30 percent will come from the on-site population and 70 percent from other tourists and residents in the region. The three hotels, housing 700 total rooms in boutique first-class to comprehensive luxury facilities, will have an estimated minimum $115.6 million in annual revenues. The supporting businesses in the eight timeshare projects are forecast to produce $65.7 million in total yearly income, and the 500,000 square feet of retail commercial space in the community (including the Marina Village) annual sales of $425.0 million. The expanded 800 slip marina basin and associated eight-acre industrial area will produce a stabilized gross income of $18.9 million per year, and the other minor operating components in the development (the proposed clubs, marine center and dolphin experience) another $17 million in sales.

- The "base economic impact" of the subject to West Hawaii and elsewhere on the island will grow from $46.7 million in Year 1 to a stabilized level of $858.8 million annually; totaling $7.5 billion during the initial 18 years of construction and absorption. The "overall" economic impact created by the flow of monies through the Hawaii market will be at least double these amounts.

Public Costs/Benefits Resulting from Development

We have estimated the overall cost to the state and Hawaii County governmental services resulting from the subject development using both actual and per capita perspective.

From an actual public service cost, Kona Kai Ola will represent only a fraction of the county and state efforts and overall urban/visitor oriented lands in use. Given the vast number of housing units, resorts, businesses, and agricultural lands on the island, it is difficult to assert that of themselves the subject development and users will create the need for meaningful expansion of existing public services.

However, the need for additional services is a cumulative effect, each project, each resident, tourist and, to a lesser degree, business adds a little bit to the community base until increased "need thresholds" are reached.

As an alternative to actual cost estimates, which are often disparate as they inherently cannot provide for unexpected and/or atypical items, it is most common to project public costs on a per çapita allocation based on the population of a given project.

Government services are holistic in nature, providing a foundation throughout a community, regardless of actual, specific impact on any given land holding. A subject component may not have a need for off-site parks or schools, but they are essential to the patrons and workers and create the climate in which the business operates. Similarly, government administration, capital projects and public welfare items may have no direct relation to a particular project, but provide the economic underpinnings that enhances general overall economic success.

The total annual "actual" cost to Hawaii County on a stabilized basis at build-out and full use of the subject development is estimated at less than $1.5 million per year. The State of Hawaii direct costs are estimated at circa $500,000 annually by Year 18 of the projection model.

On a "per capita" basis, the costs to Hawaii County will escalate from $788,744 annually in Year 4 of the project, to a stabilized level of $7.7 million per year upon full absorption. The State of Hawaii costs will run from $3.75 million in the first year of occupancy to $36.5 million yearly at stabilization.

The four primary taxes generated by the development and operation of Kona Kai Ola, and the amounts they are forecast to produce are as follows:

- Real Property Tax (to Hawaii County) -- The assessed value of the subject holding will increase from a land-only value of circa $134.2 million upon entitlement and development commencement in Year 1 of the project, to in excess of $2.19 billion upon build out. The associated real property taxes will grow from $1.2 million in the first year to a stabilized annual level of $19.7 million (using current assessment rates). The total real property taxes collected during the 18-year absorption period will be $233.6 million.

- Hawaii Income Tax (to the State) -- Driven by the wages of the construction and operational employees in the community, and profits from subject businesses, the subject development will produce income tax payments estimated to grow from $2.0 million in Year 1 to above $10 million in high-construction years, before stabilizing at $8.8 million over the long-term. During the model time-frame, the total collected is projected at $146.7 million.

- Gross Excise Tax (to the State) -- These tax receipts will flow from the construction contracts, expenditures in the region by subject workers (on and off-site), the gross sales of operating business, and the off-site purchases of Kona Kai Ola guests. The amount collected is forecast to be at $6.4 million in the first year of development, reaching upwards of $33 million during major building years, and stabilizing at $32 million annually after build-out. The state will garner an estimated $446.9 million in excise taxes during the model period.

- Transient Accommodation Tax (18.6 percent to Hawaii County, 55.2 percent to the State) -- Hotel room guests and timeshare unit users will have to pay a tax of 7.25 percent on their effective daily lodging rate. For hotel guests the Average Daily Rate being charged is the basis for the tax; for timeshares it is the estimated nightly market rate for a visitor unit of that type. This tax collection will begin in Year 4 of the development as the occupancy of the subject inventory commences, and will move upwards from $1.7 million annually initially, to an estimated stabilized amount of $12.98 million per year. During the projection period, the total receipts produced by this tax is forecast at $122 million.

In correlating the public costs with the tax benefits, the result is meaningfully positive in every year for both the State and Hawaii County, with estimated total positive cash flows of $333.5 million for the State and $187.4 million for the County during the 18 year development/absorption period.

The projected County net benefits on a stabilized annual basis are projected at $14.5 million. For the State, the stabilized benefit will be at $11.4 million per year.

A detailed discussion and tabular model of the "actual" and "per capita" impacts of Kona Kai Ola on the public purse is presented in Exhibit VII.

CERTIFICATION

The undersigned do hereby certify that, to the best of our knowledge and belief, the statements of fact contained in this report are true and correct. It is further certified that the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, conclusions and recommendations. We further certify that we have no present or prospective interest in the property that is the subject of this report, and have no personal interest with respect to the parties involved. We have no bias with respect to the property that is the subject of this report or the parties involved with this assignment. Our engagement in this assignment was not contingent upon developing or reporting predetermined results. Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this report. The analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice. The use of this report is subject to the requirements of the Appraisal Institute relating to review by duly authorized representatives. The undersigned certify that they have made personal visits to the property that is the subject of this report. No other persons provided significant real property consulting assistance other than the undersigned.

The Appraisal Institute conducts programs of continuing education for their designated members. As of the date of this report, James E. Hallstrom, Jr. has completed the requirements of the continuing education program of the Appraisal Institute.

James E. Hallstrom, Jr., MAI, CRE
Hawaii State Certified
General Appraiser, CGA-178
Exp. Date December 31, 2007

Tom W. Holliday

4242FR01

ADDENDA

EXHIBIT I -- MARKET AREA OVERVIEW

The subject holding is situated on the shoreline within the Kealakehe ahupua'a between the Kona International Airport and Kailua-Kona town. The area is undergoing rapid urbanization and is emerging as a focal point of the Big Island and West Hawaii economies.

The purpose of this section is to provide a reasonably detailed overview of the subject environs, moving from the general to more specific. The review opens with the county of Hawaii, then moves to a discussion of West Hawaii, then the North District, and finally to the central Kailua-Kona urban area and the Keahole-to-Kailua-Kona corridor.

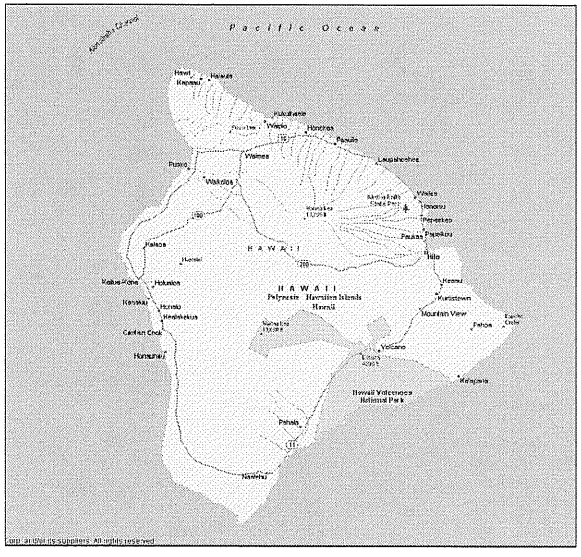
This information and analysis provides a foundation for the much more specific and macro and micro market study which follows.

We note, this less time sensitive overview utilizes data compiled through year-end 2004 and into 2005. Complete figures for full year 2006 have not all been released by state and county agencies as of the study date. We would not anticipate the 2006 data to have a meaningful impact on this general, long-range environs description.

Hawaii County Description

The county of Hawaii consists of the island of Hawaii (Big Island), the southernmost major island in the Hawaiian chain. Hawaii County is the second most populous of the four counties that make up the State of Hawaii, following Oahu, and is by far the largest island in the chain with land area of Hawaii is 4,038 square miles.

At year-end 2005, the resident population of the island was preliminarily estimated at 187,668 persons, about 14 percent of the statewide total and averaging an annual growth rate of about 2.5 percent. Historic and projected resident and de facto population statistics for the study areas are shown on Table I-1.



The island is characterized by many small towns dispersed along the coastline. The island has been divided into nine districts--Puna District, the North and South Hilo Districts, Hamakua District, North and South Kohala Districts, North and South Kona Districts, and Ka'u District.

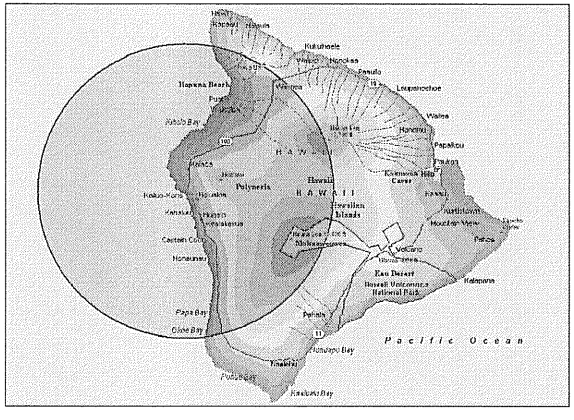
Two volcanic mountain peaks, the 13,796-foot Mauna Kea and the 13,679-foot Mauna Loa, dominate the central portion of the island. Three other major volcanic emergences combine with Mauna Kea and Mauna Loa to form the island of Hawaii. The Kohala Volcano, which is more commonly referred to as Kohala Mountain, is the oldest volcanic land mass on the island that forms the extreme northern portion of Hawaii. Hualalai, in the west, is located northeast of Kailua-Kona. The final volcanic presence is Kilauea Crater, with its associated and yet active East Rift Zone at the far southeastern end of the island.

Hilo, located along the eastern coast, is the principal population, administrative, and civic center on the island. Other population centers include Kailua-Kona on the island's west coast and Waimea situated inland within the northern saddle between Mauna Kea and the Kohala Mountain.

West Hawaii Region

The West Hawaii Region consists of North and South Kohala as well as North and South Kona Districts. The principal towns that service this region are Kailua-Kona, North Kona; Waimea, South Kohala; Captain Cook, South Kona; and Hawi, North Kohala. The principal core area of the region is comprised of North Kona and South Kohala. The coastline of these two districts are known for their numerous high-end destination resort properties, including Mauna Kea Beach Resort, Mauna Lani Resort, Waikoloa Beach Resort, Kona Village/Hualalai Resort, Kukio, and Keauhou Resort.

The subject property is situated within the North Kona district, the leader in the region, surpassing in overall importance the other three districts comprising West Hawaii. The following section describes this general market area for the proposed subject inventory. The circle on the subsequent map defines the larger study region.

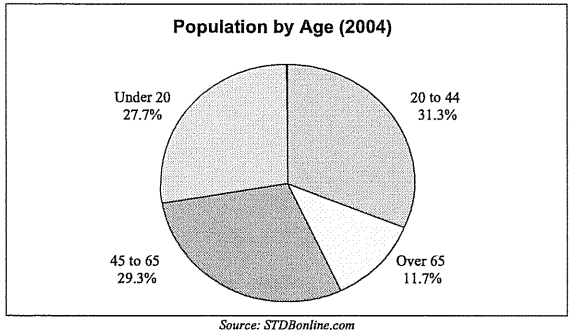


Key Demographic Factors

	West Hawaii	Hawaii County
Total Population (2004)	51,718	161,480
Male	50%	50.0%
Female	50%	50.0%
Median Age	38.7	38.1
2004 Households (HH)	19,288	58,557
Estimate 2009 HH (11%)	21,541	65,112
Average HH Size	2.7	2.7
1990-2000 HH Growth	35.2%	27.8%
Median Income	$50,953	$42,558
Per Capita Income	$25,222	$20,525
Average HH Income	$67,632	$55,871
Vacant Housing Units	21.6%	15.4%

Source: STDBonline.com

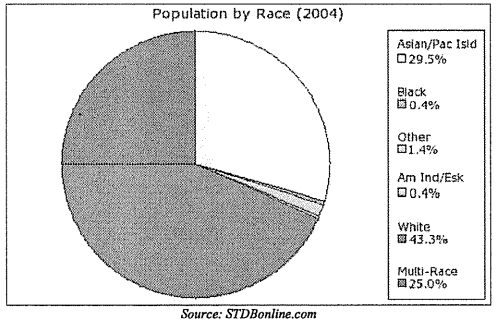
The general subject market is well-established and expanding community which comprises about 30 percent of the county population. A decade of development in west Hawaii has resulted in the significant household growth reported in 2000, which outpaced the overall county and is expected to expand by 11 percent by 2009. There is a variety of mixed ages and races as seen in the graphs below.



Source: STDBonline.com

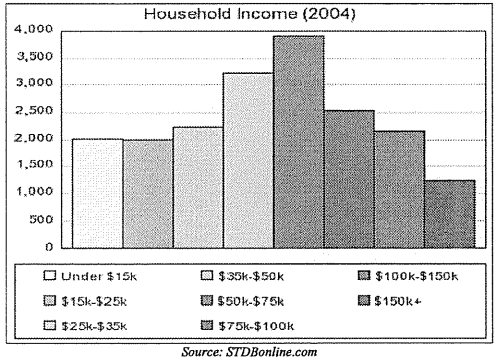
Half of all adults are married, 28 percent never married and five percent are divorced. Approximately 36 percent of households include children.

Education levels range from graduate degrees to kindergarten. The majority of the population, 57 percent, has attended some college, with 34 percent of the population achieving an Associates Degree or higher.



Source: STDBonline.com

As stated previously, the average household's mean income in 2004 is $67,632 in the West Hawaii study area, and $55,871 in Hawaii County.



Source: STDBonline.com

Spending Profile

Average Household Expenditure	West Hawaii	Hawaii County
2004	$52,659	$46,168
2009	$56,687	$49,656
Change	7.7%	7.6%
Average Retail Expenditure		
2004	$21,916	$19,186
2009	$23,584	$20,630
Change	7.6%	7.5%

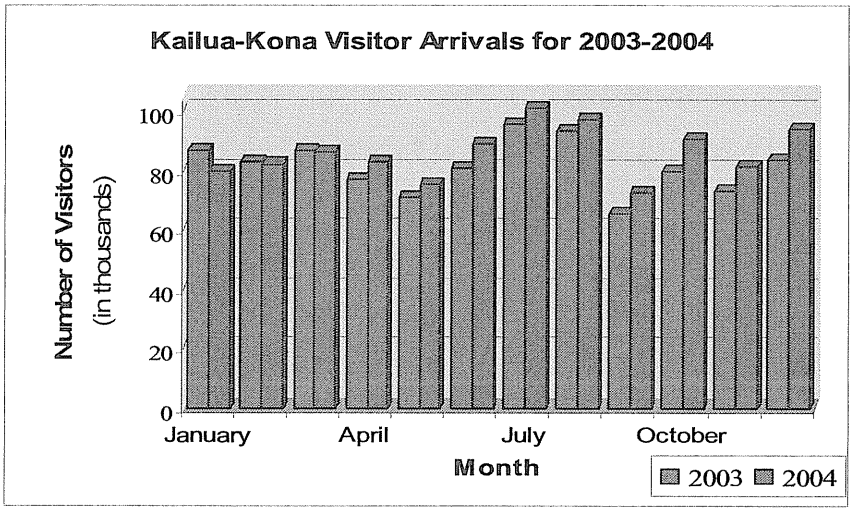
Source: STDBonline.com

In the immediate market area, the average household annually spent circa $11,000 on transportation (21.2 percent), $9,000 on shelter (17.1 percent), $8,700 on food and beverages (16.7 percent) and $5,200 on food at home (9.9 percent). Other expenditures included rental costs, health care, mortgage interest, apparel and entertainment. The local demographics depicted support a viable commercial opportunity.

Visitor Industry

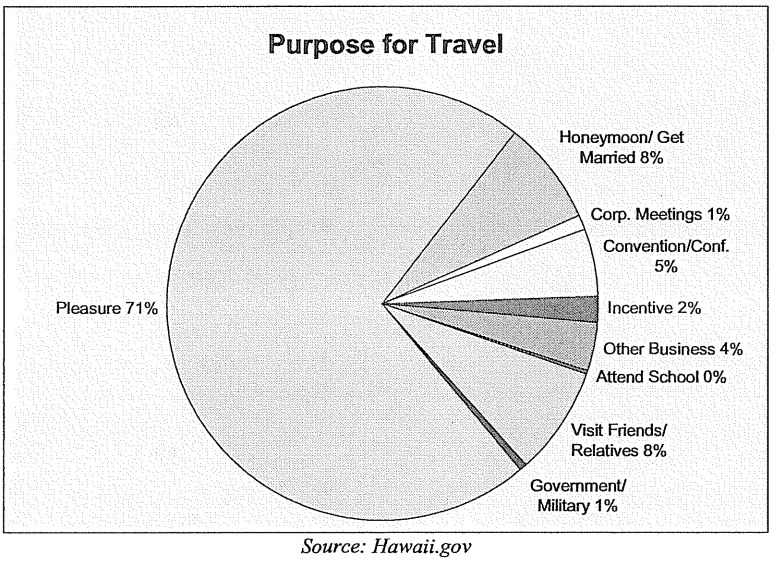
2004 Visitor Data	West Hawaii	Hawaii County
Total Visitors	1,035,114	1,278,713
Visitor Days	6,655,783	8,401,144
Average Party Size	2.13	2.10
Length of Stay	6.43	6.57

Source: DBEDT



Source: Hawaii.gov

Visitors spent an average of $141 per day in the west Hawaii area, of which approximately $48 went to restaurants and shopping centers.



Source: Hawaii.gov

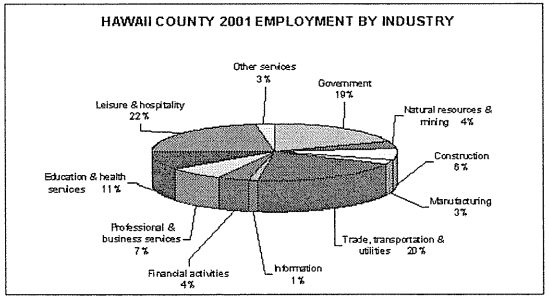
Key Economic Indicators of the State

Economic indicators point to a recovering economy led by the state's largest sector, the visitor industry. Short-term inflation is expected to be in control, while personal income will rise at moderate rates. Overall, the outlook for the state is positive in terms of total output and job creation.

Economic Indicators	2003	2004	2005	2006	2007	2008
	(Actual)		Forecast			
Total population (thousands)	1,249	1,263	1,278	1,292	1,306	1,319
Visitor arrivals (thousands)	6,442	6,988 1/	7,228	7,427	7,612	7,787
Visitor days (thousands)	59,228	63,921 1/	66,173	67,538	68,948	70,412
Visitor expenditures (million dollars)	10,055	10,726 1/	11,200	11,764	12,290	12,830
Honolulu CPI-U (1982-84=100)	184.5	190.6	196.7	202.4	207.9	213.3
Personal income (million dollars)	38,470	40,766 1/	43,212	45,632	48,004	50,405
Real personal income ($1996 million)	35,593	36,510 1/	37,500	38,484	39,414	40,345
Total wage & salary jobs (thousands)	574.4	589.2	599.8	607.6	615.5	622.9
Gross state product (million dollars)	46,638 1/	49,343 1/	52,106	54,816	57,556	60,319
Real gross state product ($1996 million)	39,831 1/	41,114 1/	42,399	43,601	44,751	45,890
Gross state product deflator (1996=100)	117.1 1/	120.0 1/	122.9	125.7	128.6	131.4
	Annual Percentage Change					
Total population	1.2	1.1	1.2	1.1	1.1	1.1
Visitor arrivals	-0.2	8.5 1/	3.4	2.8	2.5	2.3
Visitor days	0.5	7.9 1/	3.5	2.1	2.1	2.1
Visitor expenditures	4.6	6.7 1/	4.4	5.0	4.5	4.4
Honolulu CPI-U	2.3	3.3	3.2	2.9	2.7	2.6
Personal income	4.7	6.0 1/	6.0	5.6	5.2	5.0
Real personal income	2.3	2.6 1/	2.7	2.6	2.4	2.4
Total wage & salary jobs	1.9	2.6	1.8	1.3	1.3	1.2
Gross state product	6.0 1/	5.8 1/	5.6	5.2	5.0	4.8
Real gross state product	3.8 1/	3.2 1/	3.1	2.8	2.6	2.5
Gross state product deflator	2.1 1/	2.5 1/	2.4	2.3	2.3	2.2

1/ Preliminary.
Source: Hawaii State Department of Business, Economic Development & Tourism, February 23, 2005.

Employment Outlook By Industry



Source: Covered Employment & Wages, Research & Statistics Office, HI State Dept. of Labor & Industrial Relations.

Leisure and hospitality is the leading source of employment at 22 percent in Hawaii County. This is also the leading industry in the state. Retail trade and transportation follow closely behind at approximately 20 percent. Other industries such as government (19 percent) and education (11 percent) are also top industries. The other quarter of the work force consists of construction, which is on the rise, business and other services.

Monthly Job Count (in thousands)
Hawaii County

	04/05	03/05	04/04	Change From 1 Mo. Ago	Change From 1 Yr. Ago
Total Nonfarm	60.8	60.7	58.7	0.16%	3.58%
Natural Res., Mining & Constr.	4.7	4.6	4.4	2.17%	6.82%
Manufacturing	1.5	1.5	1.4	0.00%	7.14%
Trade, Transportation, Util.	13	12.9	12.7	0.78%	2.36%
Information	0.6	0.6	0.6	0.00%	0.00%
Financial Activities	2.5	2.5	2.5	0.00%	0.00%
Professional & Business Svcs	4.3	4.5	4.3	-4.44%	0.00%
Educational & Health Svcs	6.9	6.7	6.4	2.99%	7.81%
Leisure & Hospitality	13.8	13.9	13.3	-0.72%	3.76%
Other Services	1.7	1.7	1.7	0.00%	0.00%
Government	11.7	11.7	11.5	0.00%	1.74%

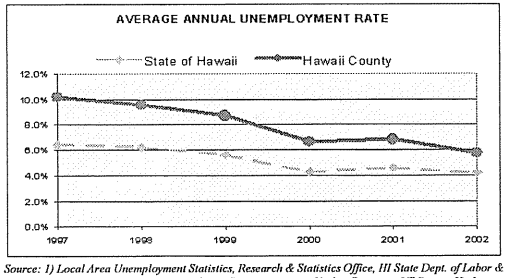
Totals may not add due to rounding.

Source .hiwi.org

Unemployment Rate

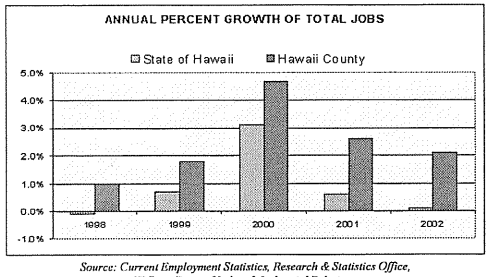
	April 05	March 05	April 04
Hawaii County	3.4	3.2	3.9
State	2.8	2.6	3.2
U. S.	4.9	5.4	5.4

Source: http://www.hiwi.org/



Source: 1) Local Area Unemployment Statistics, Research & Statistics Office, HI State Dept. of Labor & Industrial Relations; 2) Current Population Survey, Bureau of Labor Statistics, US Dept. of Labor.

Employment in the state continues to outpace the national average and reported the lowest unemployment rate in the nation in 2004. Hawaii County unemployment rates are slightly higher than the state average, but continue to be well under the national level. As seen below, the number of jobs in Hawaii County has been on the rise, and the gap between the state levels of unemployment has narrowed since 1998.



Source: Current Employment Statistics, Research & Statistics Office, HI State Dept. of Labor & Industrial Relations.

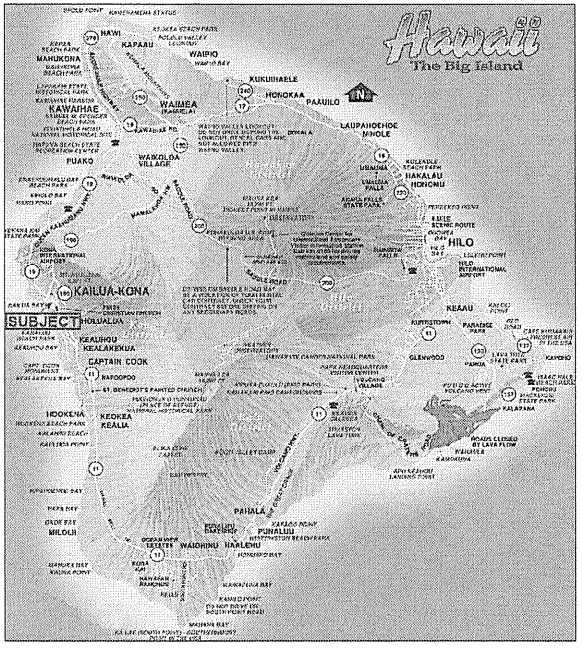
North Kona District

The Kona area, a primary component of West Hawaii, is divided into the North and South Kona Districts, which stretch along the coastal plain and western flanks of Mauna Loa and Hualalai for nearly 80 miles. Relatively young geologically, the topography is characterized by lava flows gently sloping from the shoreline to the upper elevations of the inland mountains. Mauna Loa, seasonally snow capped and an active volcano, is the second highest Pacific-island peak with a 13,677-foot summit.

Generally, temperatures in North Kona decrease and rainfall and vegetation increase the further mauka the location. Along the relatively barren coastal plain, temperatures average from 72 to 80 degrees, with rainfall between 20 and 50 inches annually. In the central elevations of the district, from 500 to 2,300 feet above sea level, temperatures are approximately five degrees cooler than at the coastline, with 60 to 70 inches of rain per year. The sunny Kona coastline mainly appeals to tourists and retirees, resulting in intensive resort-type development between Kailua-Kona and the Keauhou Resort, while the large majority of permanent residents historically have preferred the cooler, agriculturally oriented central elevation areas. Land above the 4,000-foot level is typically ohia lehua and fern rain forest, and sparsely populated.

Tourism is the primary business activity in North Kona, and the major economic stimulus for the entire district. Agriculture, still the main focus of South Kona, has been relegated to a secondary status in the north. Currently, there are approximately 4,600 transient dwelling units available in North Kona, comprising over 50 percent of the island's total inventory.

Many industries, including real estate, commercial, service oriented, and retail in particular, have benefited and expanded due to the income generated through tourism. Through mid-1990, property values in general had increased significantly over the preceding decade--a result of the influx of visitor, resident, and retiree capital. This sharp rise in land prices had created concern in the agricultural community; however, over the past five years, real estate prices have generally dropped significantly between 20 and 75 percent, depending on the real estate submarket, with resort oriented and bulk acreage market segments severely impacted.



While the historic base of North Kona was ranching, fishing, and diversified agriculture, the past two decades has seen a transition in the socioeconomic character of the region from an agrarian lifestyle to a resort and residentially oriented community designed to meet the increasingly urbanized employment needs in the tourism-spurred Kailua-Kona to Keauhou and South Kohala development corridors. Yet, as tourism is generally oriented toward the warm sea coast area, away from upland residential/agricultural neighborhoods, a continued harmony between agricultural and urban/resort development is anticipated.

In late 1993, Price/Costco opened the area's first big-box discounter. Other discounters quickly followed suit, with Kmart, Wal-Mart, and Home Depot now available to West Hawaii. Lowe's Home Improvement center opened in late 2003. These changes have positively impacted consumers' purchasing power, but have thrown many traditional area retailers into competition shock, while they attempt to identify niche markets. Many smaller retailers have been chased from the market.

Ranching, considered a poor use of the rocky and relatively expensive land in the district, has given way to a variety of sub-tropical and temperate crop production agricultural uses, although (for tax purposes) many bulk acreage holdings are still marginally classified as grazing. There are expansive macadamia nut orchards in both North and South Kona, with avocados, coffee, citrus, and floral/nursery products also cultivated. Commercial and charter fishing is a traditional and continuing economic activity, and a strong identification source for the Kailua-Kona community.

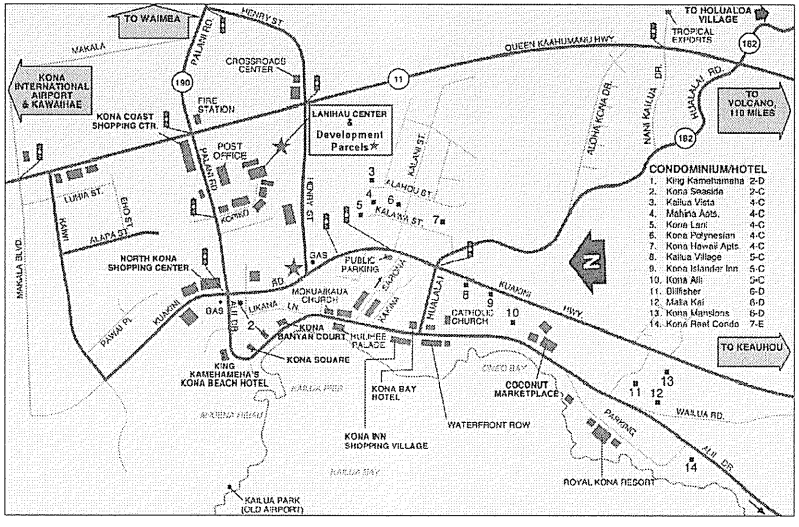
Keahole Airport is located approximately nine miles north of Kailua-Kona and has been handling direct mainland flights (via United Airlines) since July 1983. Expanded boat anchorage has been made available at Honokohau Small Boat Harbor. Adjacent to the airport is the Hawaii Ocean Sciences and Technology (HOST) Park. This project, funded by the state, offers private enterprises the opportunity to exploit the potentials of the North Kona coastal waters.

Educational facilities include elementary and secondary schools located immediately north of Kailua-Kona, with an additional school midway between Kailua-Kona and Keauhou. Konawaena High School is located approximately 12 miles south of the village. Kealakehe High School, situated within the Villages of Laiopua development, was completed during 1997. Its first class of freshmen entered the school in the fall of 1997. It is anticipated that a new class will be added to the school in each of the following three years.

All schools have bus service. Police and fire protection are located in Kailua-Kona.

Central Urban Area Kailua-Kona

Kailua-Kona, the population center of West Hawaii, is developed with hotels, condominiums, and commercial services generally directed toward the visitor industry. In addition to tourism, the village is the commercial hub for residential and agricultural developments in the surrounding area.



The corridor between Kailua Village and Keauhou, stretching from the shoreline up-slope to Mamalahoa Highway, is in a state of evolution, with properties along the ocean being improved with condominiums and high-density residential projects. The cooler mauka areas are being developed into single-family residential subdivisions as State Land Use (SLU) and county zoning designations are changed to permit such improvement, and water is made available. Commercial frontage improvements have been made along Alii Drive, Palani Road, and Kuakini Highway.

During the late 1990s to present, much of the heretofore vacant development property situated mauka of Alii Drive has been or is currently being developed.

The recent construction of the Crossroads Centre along Henry Street has expanded and shifted the commercial center of town to a more mauka orientation extending east from Kuakini Highway and Palani Road towards Henry Street.

The Keahole to Kailua-Kona Corridor

The eight mile coastal corridor stretching from The Kona International Airport to Central Kailua-Kona, and from the shoreline upslope to the mauka residential areas has long been identified as the primary growth area for West Hawaii. The County, acknowledging the urbanization potentials for the 20 square mile region, developed the Keahole to Kailua Development Plan (published November 1990) to provide a template for uses and infrastructure systems in the vital corridor.

The stated planning goal of the county for the region was:

> "To develop a mixed residential, commercial, resort, industrial and recreational community, with approximately 8,000 or more residential units, in a functional, attractive and financially viable manner. The community will include appropriate shoreline uses, public facilities, and infrastructure and will be built out over the next 20 years" (K to K Development, page I-2).

The plan projected land uses for the corridor (and associated acreage) as follows:

Coastal Zone

1.	Commercial/Industrial	100 Ac.
2.	Waterfront Parks	250
3.	Sewage Treatment Plant	50
4.	Civic and Business Center	100
5.	Harbor Complex	100
6.	National Cultural Park	540
7.	Visitor Use/Residential//Recreation	625
8.	Ocean Research Commercial/Industrial	620
9.	Ocean Research (NELH)	320
10.	Keahole Airport	1,675
11.	General Industrial	180
12.	Open/Recreation	1,300
13.	Open	365
	Subtotal	6,225

Lowland Urban Zone

1.	Municipal Golf Course	200
2.	Kealakehe Planned Community (portion)	200
3.	Limited Industrial	300
4.	Urban Expansion	1,100
5.	Open/Recreation	800
	Subtotal	2,600

Upland Residential Zone

1.	Kealakehe Planned Community (balance)	500
2.	Other Residential Areas (including parks)	1,830
3.	Schools: Elementary (2) Middle and High Schools	85
4.	Private Golf Course	200
5.	University	500
6.	University-Related Residential	610
7.	Lands of Kau	800
	Subtotal	4,525
	TOTAL ACREAGE	13,350

The Kona Kai Ola holding is located in the heart of the area (about four miles from either end), and offers the only remaining opportunity in the corridor upon which to build competitive visitor oriented product; which has not been done to date despite it being a stated goal of the plan.

Significant development has occurred in the area, mostly light industrial and commercial uses along the Queen Kaahumanu Highway frontage (within the Coastal and Lowland Urban zones), and residential subdivision (in the Upland Residential zone). Major projects include the four phases of the Kaloko Industrial Park, the Kohanaiki Business Park, the HOST park, the initial retail phases of the Queen Liliuokalani Trust holdings, and first increments of the Villages at Lipoa residential community (along with minor mauka in-fill subdivisions).

Public uses in the region include the airport, Honokohau Small Boat Harbor, new middle and high school facilities, a police substation, sewage treatment plant, and several new mauka-makai arterials. Long-term plans call for additional civic uses, such as a higher education campus, municipal golf course, public agency offices, and regional parklands.

Near term proposed projects include an additional 300-plus acres of light and heavy industrial lands (Lanihau/Honokohau Mauka), upwards of 200 acres of additional commercial and 150 acres of residential development on the QLT lands in the southern end of the corridor, and several mid-elevation residential projects containing more than 500 homes/units.

TABLE I-1

HISTORIC AND PROJECTED RESIDENT AND DE FACTO POPULATION
FOR GENERAL AND PRIMARY STUDY AREAS 1980 TO 2025
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

	Historic Figures				Projected Figures (Using County "Series C" Estimates)			
Year	**1980**	**1990**	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**
1. County of Hawaii								
Resident Population	92,053	120,317	148,677	167,293	188,031	211,357	237,323	266,000
% Annual Average Change		3.1%	2.4%	2.5%	2.5%	2.5%	2.5%	2.4%
Tourism Population	6,647	12,885	18,396	20,375	22,616	25,000	27,500	30,300
% Annual Average Change		9.4%	4.3%	2.2%	2.2%	2.1%	2.0%	2.0%
Total De Facto Population	98,700	133,202	167,073	187,668	210,647	236,357	264,823	296,300
% Annual Average Change		3.5%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%
% of State Total	12.4%	12.7%	13.6%	14.0%	14.6%	15.2%	16.0%	16.7%
2. West Hawaii (1)								
Resident Population	27,518	43,373	56,301	62,160	74,000	87,000	100,357	115,000
% Annual Average Change		5.8%	3.0%	2.1%	3.8%	3.5%	3.1%	2.9%
Tourism Population	5,583	11,468	16,372	18,949	21,146	23,500	25,988	28,785
% Annual Average Change		10.5%	4.3%	3.1%	2.3%	2.2%	2.1%	2.2%
Total De Facto Population	33,101	54,841	72,673	81,109	95,146	110,500	126,345	143,785
% Annual Average Change		6.6%	3.3%	2.3%	3.5%	3.2%	2.9%	2.8%
% of County Total	33.5%	41.2%	43.5%	43.2%	45.2%	46.8%	47.7%	48.5%
3. Greater Kailua-Kona (2)								
Estimated Resident Population	11,382	15,606	19,078	21,800	24,700	28,000	31,500	35,400
% Annual Average Change		3.7%	2.2%	2.9%	2.7%	2.7%	2.5%	2.5%
% of County Total	11.5%	11.7%	11.4%	11.6%	11.7%	11.8%	11.9%	11.9%

(1) Includes the Districts of North Kohala, South Kohala, North Kona and South Kona.
(2) Includes area from Keahole to Keauhou.

Source: State of Hawaii, County of Hawaii and The Hallstrom Group, Inc.

EXHIBIT II -- OVERVIEW OF HAWAII TOURISM AND WEST HAWAII RESORT DEVELOPMENT

Summaries of pertinent State of Hawaii and Big Island/West Hawaii tourism and hotel statistics in recent decades are contained on the tables which open this exhibit.

Table II-1 displays primary visitor statistics for the entire state for the period 1965 through 2006 (preliminary year-end estimates). Table II-2 presents statewide hotel operating data for years 1972 through 2006. General tourism trends for the Big Island since 1989 are shown on Table II-3, and hotel operating statistics for Kohala Coast properties (which are considered the most comparable and competitive with the proposed subject inventory) are on Table II-4.

The subject development is located on West Hawaii's Gold Coast, a 30-mile long resort-dominated region stretching from Kailua-Kona to Kawaihae known for its world class destination communities. An overview of these resorts, which are the primary comparables/competitors with the proposed Kona Kai Ola inventory, is provided following.

Mauna Kea Beach Resort

The Mauna Kea Beach Resort, established in the 1960's as the first South Kohala resort by Laurance Rockefeller, is home to two of Hawaii's most impressive beaches, Kauna'oa and Hapuna. The resort features two first-class hotels: the 310-room Mauna Kea Hotel, which overlooks Kauna'oa Bay, was originally constructed in 1965 and renovated in 1995; and the 351-room Hapuna Beach Prince Hotel which was built adjacent to Hapuna Beach in 1994. Both hotels are currently managed by Prince Resorts Hawaii.

Two 18-hole championship golf courses are located within the resort, the Robert Trent Jones Sr. designed Mauna Kea Golf Course, which opened in 1964, and Arnold Palmer and Ed Seay designed Hapuna Golf Course that opened in 1992.

Encompassing some 1,839 acres, the Mauna Kea Resort has developed a variety of residential products:

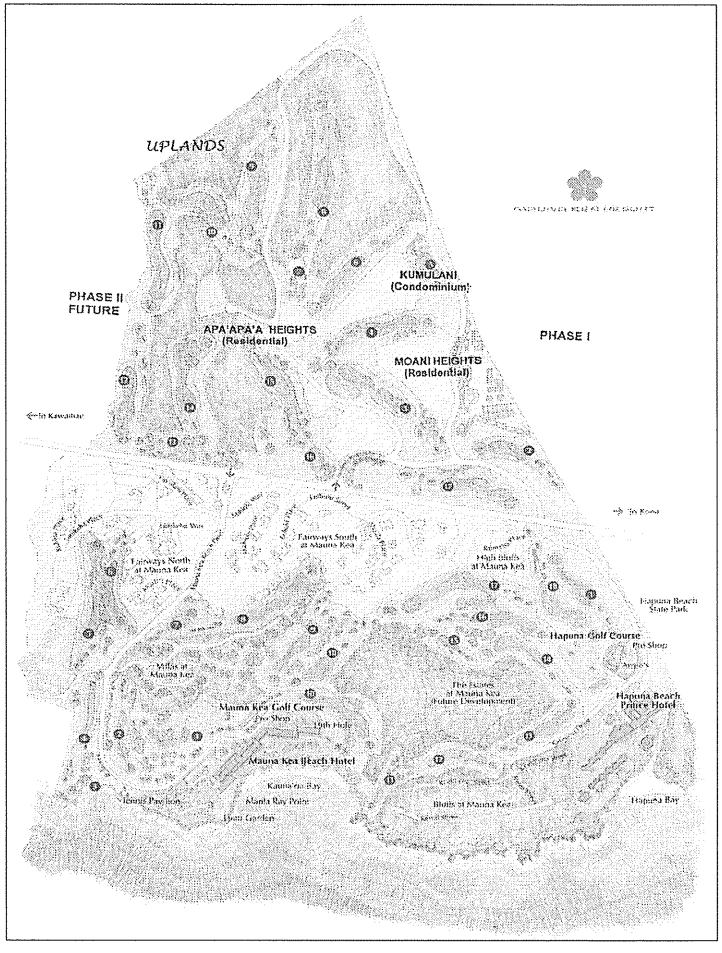
The Bluffs, a 22-lot, oceanfront, residential subdivision constructed in 1997, which is situated between the Mauna Kea Beach and Hapuna Prince hotels.

The Mauna Kea Fairways North and South, developed in the 1970's with a total of 55 homesites, many with golf course frontage.

The Uplands projects, located on the mauka side of Queen Kaahumanu Highway, include the 40-unit Kumulani condominium project (four-plexes) and the Moani Heights development which consists of 24 house and lot packages.

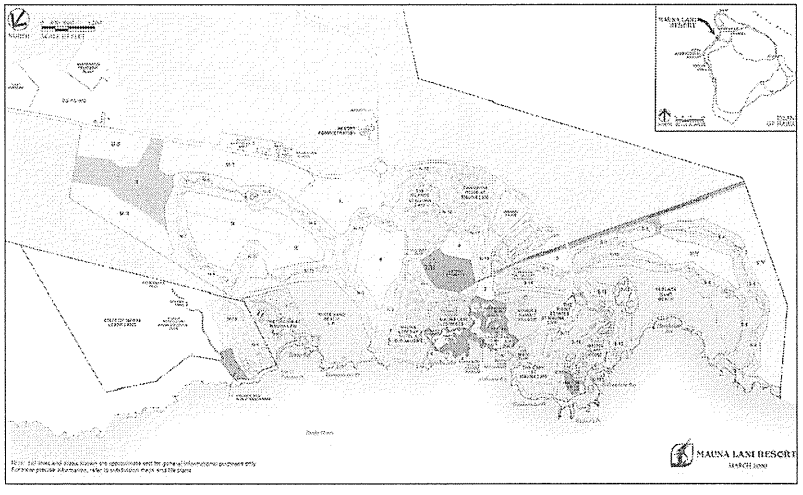
A 51.631-acre development site owned by Kohala Woodvale Associates is currently being developed with 28 Estate Lots and 14 duplex villas. The project is known as Kauna'oa at Mauna Kea.

Wai'ula'ula, a 102-unit luxury development by Maryl which is currently under construction in the Uplands portion of Mauna Kea. Single Family, Duplex, and Four-plex product types are planned.



Mauna Lani Resort

The Mauna Lani Resort quickly moved into a rival position with the Mauna Kea Resort after opening in the early 1980's. Mauna Lani is home to two AAA-rated four diamond resort hotels: The 350-room Mauna Lani Bay Hotel and Bungalows which opened in 1983 and subsequently refurbished in 1997, and the 539-room Fairmont Orchid, Hawaii hotel, which opened in 1990 and was previously operated by Ritz-Carlton, Sheraton, and Colony.



The Mauna Lani Resort has two 18-hole golf courses known as the Francis H. I'i Brown North and South. The original 18-hole course opened in 1981. In 1991, an additional 18 holes were constructed, and later re-divided into two different and new 18-hole courses. The resulting layout is thought by some to be the best collection of oceanfront holes in Hawaii.

Mauna Lani, containing 3,200 acres of land, has substantial residential development, highlighted by the following:

Three residential condominium projects: The 80-unit Mauna Lani Terrace project completed in 1983. Mauna Lani Point which contains 116 units and was constructed in 1987. The Islands at Mauna Lani's 46 units were built during the early 1990s and experienced initial marketing resistance due to both the timing of the development and the excessive maintenance fees required to operate extensive water features surrounding the entire project. Those water features have since been filled in with soil and landscaped.

The successful "49 Black Sand Beach" oceanfront residential subdivision developed by Sea Cliff Development, LLC in 1998 on a hotel zoned site.

Mauna Lani's last remaining hotel site, adjacent to the then Orchid at Mauna Lani hotel, was purchased by White Sand Beach Limited Partnership in December 1999 for the development of nine oceanfront and 31 interior residential lots. This 52.950-acre oceanfront holding, now known as Pauoa Beach, has since expanded its product offering to include 9 two- and three-bedroom cottages called Na Hale at Pauoa Beach.

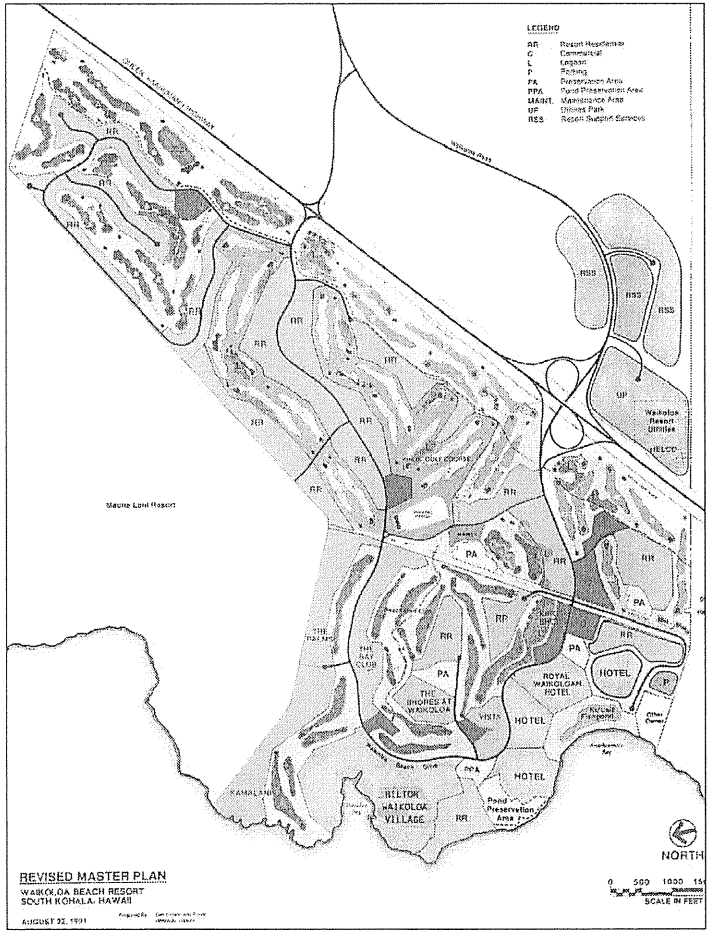
The off-water Villages at Mauna Lani site, purchased in December of 1999, was acquired by the Maryl Group for the development of 130 residential condominium units (38 detached and 92 duplex units). Model units were completed early in 2002 and sales are currently underway. On an adjacent parcel, Maryl intends to develop The Shops at Mauna Lani, a resort retail center with 64,542 square feet of retail and office space.

Stanford Carr Development is constructing 126 town home units on Site K at Mauna Lani. The project, which is known as The Fairway Villas at Mauna Lani, fronts the Mauna Lani North Course.

A 30-acre portion of Site K is being developed by A&B and Brookfield with a 137-unit single family and duplex townhome project, Ka Milo at Mauna Lani.

Waikoloa Beach Resort

The Waikoloa Beach Resort is Transcontinental's 1,352-acre beachfront resort that has entitlements in place for up to 3,000 hotel units and 3,365 residential units. The Waikoloa master planned development is comprised of lands owned by Waikoloa Land & Cattle Company and the Waikoloa Development Company that jointly act as master developer.



Waikoloa's first hotel, the 545-room Sheraton Royal Waikoloan, opened in 1981. Purchased by Blackstone recently and renamed the Waikoloa Beach Marriott (a Marriott managed property), the facility previously underwent $25,000,000 in renovations in 1999 and is planned for another significant upgrade. The 1,240-room Hilton Waikoloa Village (fka Hyatt Regency Waikoloa) was constructed in 1988 for a reported $360,000,000 by mega-resort developer Christopher Hemmeter, and is the largest and most intensive hotel facility in the State of Hawaii. The Hilton is comprised of three seven-story towers and provides guest transportation via a light rail system, canal boats, and extensive walkways. It is also home to an intricate activity pool more than one acre in size.

Waikoloa Beach Resort has two golf courses--the 18-hole Waikoloa Beach Course (1981) designed by Robert Trent Jones, Jr., and the 7,064-yard, 18-hole Kings' Course golf course (1989), designed by Tom Weiskopf and Jay Morrish.

Like other West Hawaii resorts, the Waikoloa Beach Resort features numerous residential developments:

The 42.8-acre Kolea site, adjacent to the Waikoloa Beach Marriott, is currently being developed with 17 oceanfront/ocean-oriented home sites averaging just less than one acre in size, and 126 luxury town homes.

South of the Hilton Waikoloa Village is the recent Naupaka Place development (2002) which consists of 10 one-acre home sites, eight of which front the ocean; sales are underway.

North of the Hilton Waikoloa Village and the Waikoloa Beach Course, a 28.574-acre oceanfront development site sold in February 2000, has been planned to be developed with Hali'i Kai project consisting of 192 residential condominium units, 24 of which will have direct ocean frontage.

Immediately inland of the Hali'i Kai holding is a 22.034-acre multi-family development known as the Waikoloa Colony Villas. Construction of the project's 168 units began in 2002. The project was sold out in 2004.

Also initiated in 2002 and located across the resort's man-made lagoon, Sunstone is developing a 9.796-acre interior multi-family site known as the Fairway Villas. The project consists of 165 units which are of entry-level resort quality.

In 2005, a second Sunstone project, the Waikoloa Beach Villas, broke ground on the 13.7-acre site just mauka of the Kings Shops; 120 two- and three-bedroom units are being constructed.

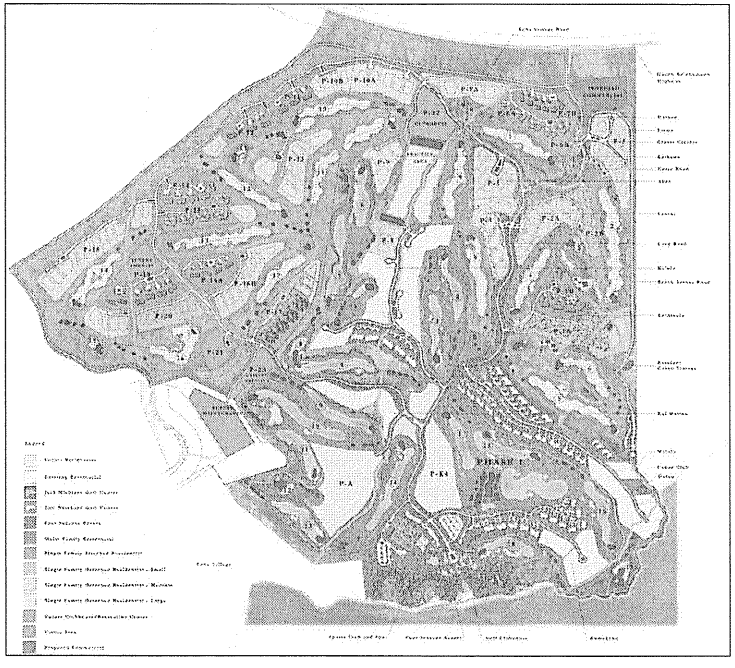
Three additional existing condominium/time share projects: The Shores at Waikoloa, an 11-building development with 120 residential units completed in 1988. The 172-unit Bay Club at Waikoloa Beach Resort was completed in early 1991. The 122 units of the Vista Waikoloa condominium project were completed in late 1991.

The resort also features the 74,000-square-foot Kings' Shops retail and dining complex. This retail center is situated near the center of the beach resort and has broad frontage along Waikoloa Beach Drive, the resort's primary thoroughfare. Waikoloa Beach Resort has announced a third expansion phase for the project, which was previously expanded by 19,000 square feet in 2002.

Waikoloa Beach Resort's long-term development plans call for as many as 1,500 additional hotel units, up to 2,500 more resort/residential units (multi and single family), and another golf course.

Kona Village/ Hualalai Resort

This upscale resort area is located approximately ten minutes north of Kona International Airport on the makai side of Queen Kaahumanu Highway within the North Kona district.



The Kona Village Resort is an older 62-acre holding improved with a 125-room Polynesian-style, low-intensity retreat facility. The isolated village, which has historically achieved high occupancy and ADR rates, is located along the shores of Kahuwai Bay.

Hualalai Resort is home to the Big Island's only AAA-rated five-diamond hotel, The Four Seasons Hualalai at Historic Ka'upulehu. This 243-unit ultra-luxury, low-rise hotel complex was completed in October 1996 and has a state-of-the-art sports club and spa facility.

Hualalai is serviced by an 18-hole Par-72 Jack Nicklaus-designed golf course, and an 18-hole Tom Weiskopf designed golf course which has

a separate clubhouse facility. The resort courses are well situated and private--for use by resort unit owners, their guests, and Four Seasons Hotel patrons.

Residential development in the Hualalai resort has been extremely diverse and widely considered to be of the highest quality. Projects developed to date include:

Kumukehu and Waiulu Estates -- Ocean-oriented home sites which were developed in the late 1990s. Lots range in size from 10,000 to 30,000 square feet. The lots have been improved with lavish homes and few, if any vacant lots are remaining.

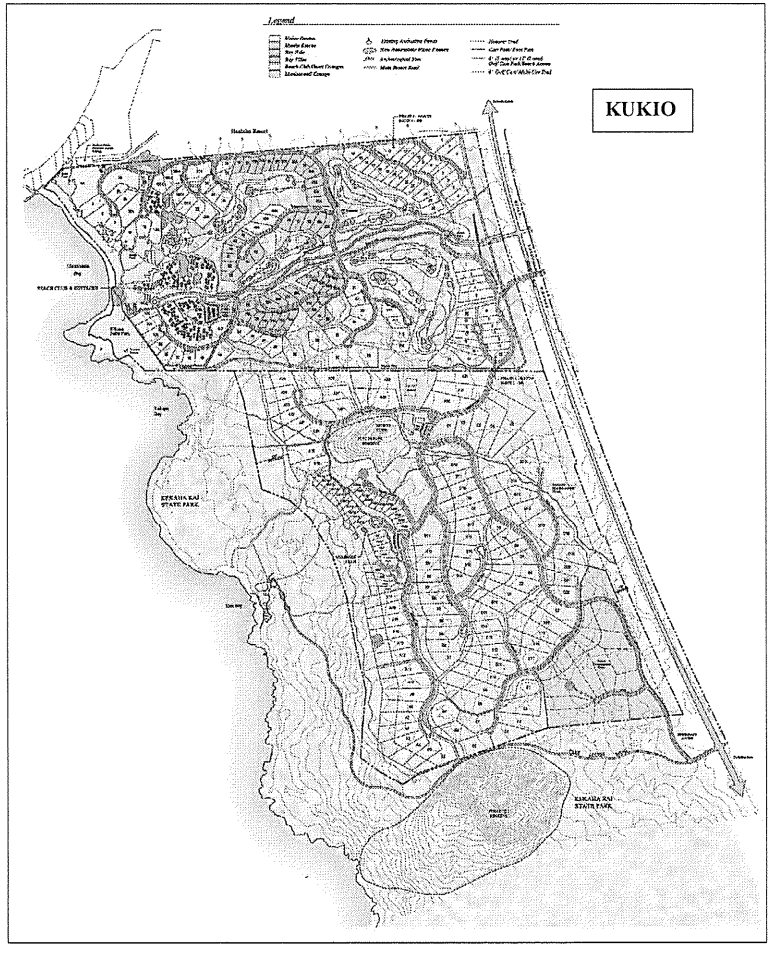
Laueki/Laueki Place Estates (2002) -- Large (approximately one acre) home sites with golf course frontage and ocean views. This subdivision is significant due to its successful acceptance into the market despite its mauka location and high price.

The Hales at Ke Alaula (2002) -- Developer-built single-family homes containing some 4,200 square feet of living area and set on one-acre lots. This subdivision consists of 15 homes located along the Weiskopf golf course.

Waiulu, Ke Alaula, Palm, Estate, Golf, and Hillside Villas (1997-Present) -- One of Hualalai's greatest achievements has been its successful marketing of ultra-luxury multi-family units. These projects vary in size and design, but capture the exclusivity of being a resort homeowner. They have a distinct single-family orientation and quality construction; many with golf course frontage.

Kukio

Immediately south of the Hualalai resort is the Kukio development, which, like phases of Hualalai, is currently under construction. The project has been successful in capturing the market acceptance of the Hualalai resort without having a freestanding hotel complex. The focal points of this development are its white sand beach along Kukio Bay, world-class golf facilities, and exclusive spa and beach club amenities. Kukio's great coup thus far has been to generate tremendous word-of-mouth advertising in the high-end marketplace which acknowledges its overall prestige and exclusivity.



Two Tom Fazio golf courses have been planned for Kukio. The first, a 10-hole short course has been completed and is adjacent to the beach club. The second, to be located mauka of Queen Kaahumanu Highway, will be known as the Kukio Uplands, a traditional 18-hole Tom Fazio course with dramatic ocean views from each hole and a members-only clubhouse and dining facilities.

Current Kukio makai development plans are as follows:

Approximately 110 Estate Lots ranging in size from two-thirds of an acre to over two acres. This development is unique in that a great amount of fill has been brought in to lift second tier residential lots 20 feet above those lots immediately fronting the ocean.

Bay Hales which will include a main house of more than 5,000 square feet, guest house, lanai, pool, spa, and garage.

Bay Villas with guest houses having combined living areas ranging from 3,100 to 3,400 square feet.

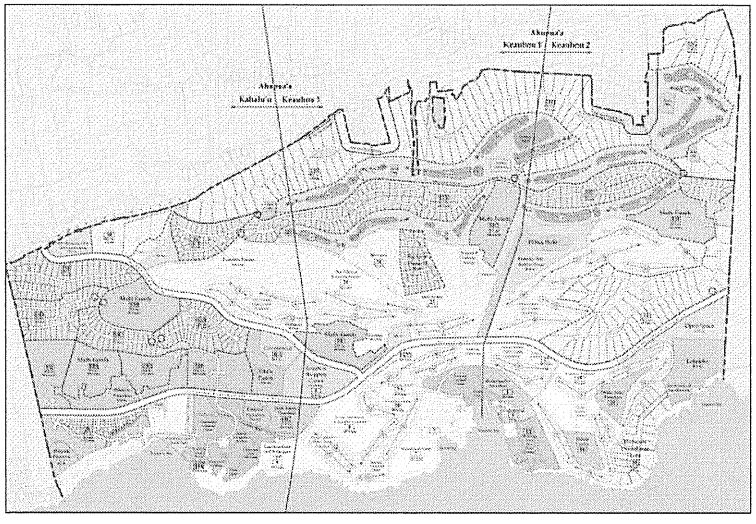
Beach Club Cottages offering two- and three-bedroom floor plans ranging from 2,000 to 2,450 square feet of living area.

Development is underway on the adjacent Maniniowali site directly to the south. 120 to 140 residential lots are planned. The first tier is subject to a 1,000-foot shoreline setback.

Just north of the Hualalai resort, Kukio is pursuing further expansion in the Kaupulehu Lot 4 area. Eighty ocean-oriented lots, each approximately one acre in size, are planned along with a resort-class golf course. Some 20 lots will have direct ocean frontage.

Keauhou Resort

The older 2,000-acre Keauhou resort area is located within the North Kona district approximately 15 minutes south of Kailua-Kona proper and 25 minutes south of Kona International Airport. It is in the midst of its third phase of development with planned residential and condominium development centered around the existing hotels, resort multi-family project, and the Kona Country Club. To date, 1,330 hotel rooms and 1,252 condominium units have been constructed in the resort.



Aston Hotels and Resorts reopened the 314-room former Kona Lagoon Hotel property on March 1, 1999, which later in 2001 changed management to Outrigger "Ohana" Hotels. The leasehold interest in the property was recently acquired by a Kamehameha Schools-related entity.

The last major hotel property within the resort has been known as the Kona Surf Hotel. This 520-room hotel closed its doors as of June 30, 2000 and was given back to Kamehameha Investment Corporation, which sold the hotel to Starwood International in mid-2001 with Sheraton Hotels taking over the hotel and its operations. The hotel was reopened in 2004 after substantial renovation and is now known as the Sheraton Keauhou Bay Resort and Spa.

Keauhou is home to the Kona Country Club's two 18-hole golf courses: the Ocean Course and the Ali'i Mountain Course.

Recent residential development has been limited to two mauka-oriented home site subdivisions offering 100 roughly 15,000-square-foot lots:

Bayview Estates Phase 1 (1995 -- 55 Lots)
Bayview Estates Phase 2 (2002 -- 45 Lots)

As was mentioned previously, Keauhou is home to several residential condominium projects, including:

Kanaloa at Kona (1980) -- 166 units
Kaulana at Kona (1990) -- 44 units
Country Club Villas (1979) -- 116 units
Keauhou Kona Surf & Racquet Club (1970s) -- 193 units
Keauhou Punahele (1979) -- 93 units
Keauhou Akahi (1974) -- 48 units
Keauhou Resort Condominiums (1971) -- 48 units
Keauhou Palena (1977) -- 56 units
Hale Kehau (1987) -- 29 units
Villas at Keauhou Estates (1990) -- 58 units

Extensive non-tourist commercial development has been undertaken at Keauhou within the original phase of the Keauhou Shopping Center. Phase II of the shopping village was completed in 1994.

TABLE II-1

STATE OF HAWAII TOURISM INDUSTRY TRENDS

Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

YEAR	TOTAL VISITORS	Annual Pct. Change	AVERAGE LENGTH OF STAY (days)	Annual Pct. Change	TOTAL VISITOR DAYS	Annual Pct. Change	VISITOR EXPENDITURES TOTAL (1) (000's)	Annual Pct. Change	DAILY PER CAPITA	Annual Pct. Change	TOTAL LODGING UNITS	Annual Pct. Change
1965	686,298	---	9.21	---	6,320,805	---	$225,000	---	$35.60	---	12,903	---
1970	1,789,591	32.15%	7.64	-3.41%	13,672,475	23.26%	$595,000	32.89%	$43.52	4.45%	30,323	27.00%
1975	2,829,105	11.62%	8.78	2.98%	24,839,542	16.34%	$1,360,000	25.71%	$54.75	5.16%	40,691	6.84%
1976	3,220,151	13.82%	8.94	1.82%	28,788,150	15.90%	$1,640,000	20.59%	$56.97	4.05%	44,093	8.36%
1977	3,433,667	6.63%	9.02	0.89%	30,971,676	7.58%	$1,845,000	12.50%	$59.57	4.57%	46,048	4.43%
1978	3,670,309	6.89%	9.33	3.44%	34,243,983	10.57%	$2,146,000	16.31%	$62.67	5.20%	48,790	5.95%
1979	3,960,531	7.91%	9.37	0.43%	37,110,175	8.37%	$2,537,000	18.22%	$68.36	9.09%	51,782	6.13%
1980	3,934,504	-0.66%	9.20	-1.81%	36,197,437	-2.46%	$2,875,000	13.32%	$79.43	16.18%	55,700	7.57%
1981	3,934,623	0.003%	9.14	-0.65%	35,962,454	-0.65%	$3,200,000	11.30%	$88.98	12.03%	57,239	2.76%
1982	4,242,916	7.84%	9.25	1.20%	39,246,973	9.13%	$3,700,000	15.63%	$94.27	5.95%	58,927	2.95%
1983	4,367,880	2.95%	9.77	5.62%	42,674,188	8.73%	$4,150,000	12.16%	$97.25	3.15%	60,198	2.16%
1984	4,855,580	11.17%	9.55	-2.25%	46,370,789	8.66%	$4,855,000	16.99%	$104.70	7.66%	64,588	7.29%
1985	4,884,110	0.59%	9.38	-1.78%	45,812,952	-1.20%	$4,900,000	0.93%	$106.96	2.16%	65,919	2.06%
1986	5,606,980	14.80%	9.03	-3.73%	50,631,029	10.52%	$5,753,000	17.41%	$113.63	6.24%	66,308	0.59%
1987	5,779,830	3.08%	9.00	-0.33%	52,018,470	2.74%	$6,473,000	12.52%	$124.44	9.51%	65,318	-1.49%
1988	6,142,420	6.27%	8.64	-4.00%	53,070,509	2.02%	$8,038,000	24.18%	$151.46	21.72%	69,012	5.66%
1989	6,641,820	8.13%	8.58	-0.69%	56,986,816	7.38%	$8,748,000	8.83%	$153.51	1.35%	67,734	-1.85%
1990	6,971,180	4.96%	8.20	-4.43%	57,163,676	0.31%	$9,363,000	7.03%	$163.79	6.70%	71,266	5.21%
1991	6,873,890	-1.40%	8.37	2.07%	57,534,459	0.65%	$10,634,094	13.58%	$184.83	12.84%	72,575	1.84%
1992	6,513,880	-5.24%	8.26	-1.31%	53,804,649	-6.48%	$9,159,703	-13.86%	$170.24	-7.89%	73,089	0.71%
1993	6,124,230	-5.98%	8.25	-0.12%	50,524,898	-6.10%	$8,148,655	-11.04%	$161.28	-5.26%	69,502	-4.91%
1994	6,430,000	4.99%	8.10	-1.82%	52,083,000	3.08%	$10,602,536	30.11%	$203.57	26.22%	70,463	1.38%
1995	6,625,049	3.03%	7.90	-2.47%	52,337,887	0.49%	$10,676,929	0.70%	$204.00	0.21%	70,490	0.04%
1996	6,824,300	3.01%	8.27	4.68%	56,436,961	7.83%	$11,174,518	4.66%	$198.00	-2.94%	70,288	-0.29%
1997	6,876,140	0.76%	8.38	1.32%	57,615,010	2.09%	$11,580,617	3.63%	$201.00	1.52%	71,025	1.05%
1998	6,743,140	-1.93%	8.63	2.94%	58,160,530	0.95%	$10,439,815	-9.85%	$179.50	-10.70%	71,480	0.64%
1999	6,741,307	-0.03%	8.90	3.23%	60,020,237	3.20%	$10,263,461	-1.69%	$171.00	-4.74%	71,157	-0.45%
2000	6,948,000	3.07%	8.93	0.26%	62,024,040	3.34%	$10,916,231	6.36%	$176.00	2.92%	71,506	0.49%
2001	6,303,791	-9.27%	9.16	2.61%	57,760,251	-6.87%	$10,064,724	-7.80%	$174.25	-0.99%	72,204	0.98%
2002	6,389,058	1.35%	9.34	1.97%	59,403,302	2.84%	$10,395,578	3.29%	$175.00	0.43%	70,783	-1.97%
2003	6,345,209	-0.69%	9.75	4.39%	61,888,312	4.18%	$11,139,896	7.16%	$180.00	2.86%	70,977	0.27%
2004	6,908,173	8.87%	9.09	-6.77%	62,795,293	1.47%	$11,868,310	6.54%	$189.00	5.00%	71,200	0.31%
2005	7,379,635	6.82%	9.09	0.04%	67,110,401	6.87%	$12,750,976	7.44%	$190.00	0.53%	72,889	2.37%
2006 (2)	7,400,000	0.28%	9.10	0.07%	67,340,000	0.34%	$12,929,280	1.40%	$192.00	1.05%	73,400	0.70%

(1) The State DBEDT changed its method of estimating expenditures from a tax receipts/economic activity formula to a survey of departing visitors in 2001-02. Analysis has confirmed this results in a significant understatement of actual expenditures and fails to account for in-state (Kamaaina) travel. In example, the formula-based 2001 figure is shown in the table, as taken from original DBEDT publication, the revised survey-based figure was 10% lower. We have continued to use the formula-based method until the inadequacies of the survey-method are addressed by the State over the next several years.

(2) Preliminary year-end estimate.

Source: State of Hawaii, The Hawaii Visitors & Convention Bureau, First Hawaiian Bank, and The Hallstrom Group, Inc.

TABLE II-2

STATE OF HAWAII HOTEL INDUSTRY TRENDS

Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

YEAR	ROOM RENTAL RATE	Annual Pct. Change	AVERAGE OCCUPANCY RATE	Annual Pct. Change	FOOD REVENUE/ ROOM (1)	Annual Pct. Change	BEVERAGE REVENUE/ ROOM (1)	Annual Pct. Change	TOTAL FOOD AND BEVERAGE REVENUE/ ROOM (1)	TOTAL FOOD AND BEVERAGE RATIO TO ROOM RATES	TOTAL FOOD AND BEVERAGE Annual Pct. Change
1972	$19.80	---	70.24%	---	$11.80	---	$4.77	---	$16.57	83.69%	---
1973	$21.52	8.69%	78.14%	11.25%	$12.93	9.58%	$5.00	4.82%	$17.93	83.32%	-0.44%
1974	$24.12	12.08%	78.35%	0.27%	$13.98	8.12%	$5.42	8.40%	$19.40	80.43%	-3.46%
1975	$27.43	13.72%	75.25%	-3.70%	$15.01	16.09%	$5.80	16.00%	$20.81	75.87%	-5.68%
1976	$29.54	7.69%	76.68%	1.90%	$15.82	5.40%	$6.22	7.24%	$22.04	74.61%	-1.65%
1977	$34.16	15.64%	76.70%	0.03%	$18.47	16.75%	$6.91	11.09%	$25.38	74.30%	-0.42%
1978	$38.46	12.59%	78.53%	2.39%	$16.62	-10.02%	$6.15	-11.00%	$22.77	59.20%	-20.31%
1979	$44.41	15.47%	73.73%	-6.11%	$18.49	11.25%	$6.74	9.59%	$25.23	56.81%	-4.04%
1980	$47.37	6.67%	69.27%	-6.05%	$19.83	7.25%	$7.53	11.72%	$27.36	57.76%	1.67%
1981	$49.73	4.98%	68.23%	-1.50%	$20.86	5.19%	$7.81	3.72%	$28.67	57.65%	-0.18%
1982	$51.85	4.26%	70.96%	4.00%	$20.46	-1.92%	$7.56	-3.20%	$28.02	54.04%	-6.26%
1983	$54.78	5.65%	69.73%	-1.73%	$20.69	1.12%	$7.35	-2.78%	$28.04	51.19%	-5.28%
1984	$59.25	8.16%	76.03%	9.03%	$20.64	-0.24%	$7.42	0.95%	$28.06	47.36%	-7.48%
1985	$68.84	16.19%	76.13%	0.13%	$22.11	7.12%	$7.89	6.33%	$30.00	43.58%	-7.98%
1986	$73.20	6.33%	81.66%	7.26%	$20.45	-7.51%	$6.85	-13.18%	$27.30	37.30%	-14.42%
1987	$79.75	8.95%	81.09%	-0.70%	$20.19	-1.27%	$6.51	-4.96%	$26.70	33.48%	-10.23%
1988	$87.94	10.27%	78.48%	-3.22%	$21.73	7.63%	$6.60	1.38%	$28.33	32.22%	-3.78%
1989	$97.37	10.72%	80.63%	2.74%	$19.40	-10.72%	$6.88	4.24%	$26.28	26.99%	-16.22%
1990	$102.34	5.10%	79.03%	-1.98%	$21.72	11.96%	$6.40	-6.98%	$28.12	27.48%	1.81%
1991	$101.89	-0.44%	72.41%	-8.38%	$21.52	-0.92%	$6.12	-4.38%	$27.64	27.13%	-1.27%
1992	$104.53	2.59%	73.67%	1.74%	$21.80	1.30%	$5.42	-11.44%	$27.22	26.04%	-4.01%
1993	$103.26	-1.21%	71.99%	-2.28%	$21.65	-0.69%	$4.99	-7.93%	$26.64	25.80%	-0.93%
1994	$104.80	1.49%	76.62%	6.43%	$21.11	-2.49%	$5.12	2.61%	$26.23	25.03%	-2.99%
1995	$114.39	9.15%	74.21%	-3.15%	$21.14	0.14%	$4.97	-2.93%	$26.11	22.83%	-8.80%
1996	$109.58	-4.20%	69.29%	-6.63%	$22.08	4.45%	$5.48	10.26%	$27.56	25.15%	10.19%
1997	$113.77	3.82%	68.93%	-0.52%	$23.35	5.75%	$5.94	8.39%	$29.29	25.74%	2.36%
1998	$140.63	23.61%	73.93%	7.25%	$24.10	3.21%	$6.48	9.09%	$30.58	21.75%	-15.54%
1999	$142.39	1.25%	73.13%	-1.08%	$25.05	3.94%	$6.91	6.64%	$31.96	22.45%	3.22%
2000	$151.79	6.60%	77.91%	6.54%	$26.16	4.43%	$7.59	9.84%	$33.75	22.23%	-0.94%
2001	$151.91	0.08%	71.45%	-8.29%	$26.02	-0.54%	$7.34	-3.29%	$33.36	21.96%	-1.23%
2002	$145.71	-4.08%	72.23%	1.09%	$25.50	-2.00%	$7.32	-0.27%	$32.82	22.52%	2.57%
2003	$149.22	2.41%	73.94%	2.37%	$25.81	1.22%	$7.74	5.74%	$33.55	22.48%	-0.18%
2004	$158.18	6.00%	78.27%	5.86%	$26.55	2.87%	$8.21	6.07%	$34.76	21.97%	-2.26%
2005	$170.37	7.71%	81.26%	3.82%	$27.21	2.49%	$8.43	2.68%	$35.64	20.92%	-4.80%
2006 (2)	$195.93	15.00%	81.36%	0.12%	$30.08	10.55%	$9.32	10.56%	$39.40	20.11%	-3.87%

(1) Per occupied room per night.
(2) Through August.

Source: PKF Hawaii and The Hallstrom Group, Inc.

TABLE II-3

ISLAND OF HAWAII TOURISM INDUSTRY TRENDS

Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

YEAR	TOTAL VISITORS	Annual Pct. Change	PERCENT OF STATE TOTAL	AVERAGE LENGTH OF STAY (days)	Annual Pct. Change	TOTAL VISITOR DAYS	Annual Pct. Change	VISITOR EXPENDITURES ESTIMATED TOTAL (000's)	Annual Pct. Change	DAILY PER CAPITA	Annual Pct. Change	TOTAL LODGING UNITS	Annual Pct. Change
1989 (1)	999,140	---	15.04%	6.49	---	6,482,400	---	$902,560	---	$139.23	---	8,161	---
1990	1,030,900	3.18%	14.79%	6.44	-0.68%	6,643,000	2.48%	$925,664	2.56%	$139.34	0.08%	8,952	9.69%
1991	1,020,390	-1.02%	14.84%	6.80	5.58%	6,942,300	4.51%	$1,090,603	17.82%	$157.10	12.74%	9,383	4.81%
1992	972,720	-4.67%	14.93%	7.25	6.56%	7,051,800	1.58%	$1,012,131	-7.20%	$143.53	-8.64%	9,170	-2.27%
1993	978,440	0.59%	15.98%	7.13	-1.67%	6,975,150	-1.09%	$1,012,636	0.05%	$145.18	1.15%	9,490	3.49%
1994	933,700	-4.57%	14.52%	7.55	5.89%	7,048,150	1.05%	$1,185,845	17.10%	$168.25	15.89%	9,595	1.11%
1995	917,610	-1.72%	13.85%	7.52	-0.41%	6,898,500	-2.12%	$1,228,906	3.63%	$178.14	5.88%	9,578	-0.18%
1996	1,031,550	12.42%	15.12%	7.38	-1.82%	7,613,900	10.37%	$1,325,800	7.88%	$174.13	-2.25%	9,558	-0.21%
1997	1,205,957	16.91%	17.54%	6.71	-9.07%	8,093,554	6.30%	$1,405,692	6.03%	$173.68	-0.26%	9,913	3.71%
1998	1,285,550	6.60%	19.06%	6.58	-1.94%	8,460,721	4.54%	$1,485,900	5.71%	$175.62	1.12%	9,655	-2.60%
1999	1,307,848	1.73%	19.40%	6.35	-3.56%	8,300,747	-1.89%	$1,515,300	1.98%	$182.55	3.94%	9,815	1.66%
2000	1,269,920	-2.90%	18.28%	6.35	0.06%	8,064,692	-2.84%	$1,530,200	0.98%	$189.74	3.94%	9,774	-0.42%
2001	1,183,005	-6.84%	18.72%	6.45	1.61%	7,634,049	-5.34%	$1,435,000	-6.22%	$187.97	-0.93%	9,944	1.74%
2002	1,235,435	4.43%	19.42%	6.51	0.96%	8,048,851	5.43%	$1,500,000	4.53%	$186.36	-0.86%	9,297	-6.51%
2003	1,208,022	-2.22%	19.04%	6.80	4.38%	8,214,961	2.06%	$1,550,000	3.33%	$188.68	1.24%	9,478	1.95%
2004	1,278,713	5.85%	18.51%	6.57	-3.45%	8,395,815	2.20%	$1,590,000	2.58%	$189.38	0.37%	10,037	5.90%
2005	1,487,747	16.35%	20.16%	6.58	0.25%	9,792,876	16.64%	$1,880,000	18.24%	$191.98	1.37%	11,351	13.09%
2006 (2)	1,585,000	6.54%	21.42%	6.14	-6.70%	9,733,924	-0.60%	$1,835,000	-2.39%	$188.52	-1.80%	11,600	2.19%

(1) Prior to 1989, quality, comprehensive data specific to the Big Island for the identified indicators were unavailable.
(2) Preliminary year-end estimate.

Source: State of Hawaii, The Hawaii Visitors & Convention Bureau, First Hawaiian Bank, and The Hallstrom Group, Inc.

TABLE II-4

KOHALA COAST HOTEL INDUSTRY TRENDS (1)
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
Kohala Coast Operations/Facilities Considered Most Comparable to Proposed Subject Hotel Product

YEAR		ROOM RENTAL RATE	Annual Pct. Change	AVERAGE OCCUPANCY RATE	Annual Pct. Change	FOOD REVENUE/ ROOM (1)	Annual Pct. Change	BEVERAGE REVENUE/ ROOM (1)	Annual Pct. Change	TOTAL FOOD AND BEVERAGE REVENUE/ ROOM (1)	TOTAL FOOD AND BEVERAGE RATIO TO ROOM RATES	TOTAL FOOD AND BEVERAGE Annual Pct. Change
1985*		$71.76	---	58.67%	---	$32.75	---	$11.35	---	$44.10	61.45%	---
1986*		$82.02	14.30%	64.60%	10.11%	$33.58	2.53%	$11.73	3.35%	$45.31	55.24%	-10.11%
1987*		$94.24	14.90%	62.46%	-3.31%	$35.84	6.73%	$11.44	-2.47%	$47.28	50.17%	-9.18%
1988*		$99.00	5.05%	58.37%	-6.55%	$37.74	5.30%	$11.43	-0.09%	$49.17	49.67%	-1.00%
1989		$180.22	82.04%	60.67%	3.94%	$42.16	11.71%	$13.13	14.87%	$55.29	30.68%	-38.23%
1990		$192.19	6.64%	58.33%	-3.86%	$41.35	-1.92%	$12.26	-6.63%	$53.61	27.89%	-9.08%
1991		$186.28	-3.08%	56.08%	-3.86%	$42.57	2.95%	$11.80	-3.75%	$54.37	29.19%	4.64%
1992		$173.54	-6.84%	55.49%	-1.05%	$42.19	-0.89%	$12.03	1.95%	$54.22	31.24%	7.05%
1993		$173.31	-0.13%	57.02%	2.76%	$40.98	-2.87%	$12.01	-0.17%	$52.99	30.58%	-2.14%
1994		$164.66	-4.99%	62.44%	9.51%	$36.91	-9.93%	$10.36	-13.74%	$47.27	28.71%	-6.11%
1995		$169.77	3.10%	61.45%	-1.59%	$35.85	-2.87%	$9.76	-5.79%	$45.61	26.87%	-6.42%
1996		$175.24	3.22%	67.45%	9.76%	$36.96	3.10%	$10.16	4.10%	$47.12	26.89%	0.09%
1997		$199.41	13.79%	67.09%	-0.53%	$39.60	7.14%	$10.80	6.30%	$50.40	25.27%	-6.00%
1998		$218.50	9.57%	73.21%	9.12%	$43.88	10.81%	$12.47	15.46%	$56.35	25.79%	2.04%
1999	(2)	$239.55	9.63%	67.97%	-7.16%	$46.04	4.92%	$12.68	1.68%	$58.72	24.51%	-4.95%
2000		$241.98	1.01%	74.55%	9.68%	$47.30	2.74%	$13.70	8.04%	$61.00	25.21%	2.84%
2001		$245.48	1.45%	66.79%	-10.41%	$47.56	0.55%	$12.84	-6.28%	$60.40	24.60%	-2.40%
2002		$239.57	-2.41%	65.78%	-1.51%	$45.30	-4.75%	$12.74	-0.78%	$58.04	24.23%	-1.54%
2003		$231.80	-3.24%	66.39%	0.93%	$39.12	-13.64%	$11.37	-10.75%	$50.49	21.78%	-10.09%
2004		$249.67	7.71%	72.18%	8.72%	$43.76	11.86%	$13.10	15.22%	$56.86	22.77%	4.56%
2005		$264.17	5.81%	71.49%	-0.96%	$48.04	9.78%	$14.71	12.29%	$62.75	23.75%	4.30%
2006	(3)	$299.28	13.29%	71.78%	0.41%	$51.92	8.08%	$16.35	11.15%	$68.27	22.81%	-3.97%

(1) Prior to 1989, the Kohala Coast was included in the "Kona" market sector.
(2) Regional occupancy figure for year is low due to subject renovations.
(3) Figures through August.

Source: PKF Hawaii, and The Hallstrom Group, Inc.

EXHIBIT III

TABLE III-1

HISTORIC AND PROJECTED TIMESHARE INTERVAL ABSORPTION

Market Study of the Proposed Kona Kai Ola Development

Kealakehe, North Kona, Hawaii

	1980	1990	1995	2000	2005	2010	2015	2020	2025
Total Timeshare Units in State	**400**	**1,500**	**2,700**	**4,276**	**7,003**	**10,200**	**13,600**	**16,200**	**20,000**
Total Timeshare Units In West Hawaii	**80**	**300**	**550**	**925**	**1,350**	**2,200**	**3,400**	**4,500**	**5,800**
Percent of State Total	20.0%	20.0%	20.4%	21.6%	19.3%	21.6%	25.0%	27.8%	29.0%
Total Intervals Sold in State	**3,250**	**9,445**	**10,380**	**14,600**	**22,800**	**30,000**	**32,500**	**35,500**	**38,000**
Total Intervals Sold in West Hawaii	**700**	**2,200**	**2,600**	**3,800**	**4,600**	**7,400**	**9,400**	**11,500**	**12,500**
Percent of State Total	21.5%	23.3%	25.0%	26.0%	20.2%	24.7%	28.9%	32.4%	32.9%
Equivalent Whole Unit Sales									
State of Hawaii	64	185	204	286	447	588	637	696	745
West Hawaii	14	43	51	75	90	145	184	225	245

Source: State of Hawaii, and The Hallstrom Group, Inc.

TABLE III-2

ANALYSIS OF MAJOR TIMESHARE PROGRAM ABSORPTION & PRICING

Market Study of the Proposed Kona Kai Ola Development

Kealakehe, North Kona, Hawaii

	2001	2002	2003	2004	2005
Average Per Interval Price (Statewide)	$18,850	$19,775	$20,900	$22,158	$23,707
Percent Annual Increase		4.91%	5.69%	6.02%	6.99%

	Low	High	Est. Avg.
Average Monthly Interval Absorption (per Project)	6	425	180

Selected Project Comparisons (Offering new product since 1996)	Interval Sales/Mo.	Sales/Year	Number of Full Units	Average Price
Kona Hawaiian Village	36	432	8	$25,200
Alii Kai Resort	8	96	2	$16,900
Marriott's Maui Ocean Club	285	3,420	67	$34,260
Marriott's Waiohai Beach Club	205	2,460	48	$35,900
Bay Club at Waikoloa Beach Resort	92	1,104	22	$28,200
Mauna Loa Village by the Sea	80	960	19	$21,450
HGVC at Hilton Hawaiian Village	280	3,360	66	$43,275
Westin Kaanapali Ocean Beach Villas	395	4,743	93	$45,000

Source: Various and The Hallstrom Group, Inc.

TABLE III-3

QUANTIFICATION OF COMMERCIAL AND MIXED-USE FLOOR SPACE DEMAND
IN THE WEST HAWAII STUDY AREA FROM 2006 TO 2030 (1)
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Scenario One: Minimum Population Estimates and Growth Rate

Year	De Facto Population: Annual Growth Rate	De Facto Population: Forecast Total	X	Per Capita Demand in Square Feet	=	Total Demand in Square Feet	X	Regional Capture Rate (2)	=	Net Regional Demand in Square Feet
2006		81,109		37.00		3,001,033		80.0%		2,400,826
2010	2.75%	91,146		37.50		3,417,975		80.0%		2,734,380
2015	2.88%	106,500		38.00		4,047,000		79.5%		3,217,365
2020	2.59%	122,345		38.50		4,710,283		79.0%		3,721,123
2025	2.50%	139,785		39.00		5,451,615		78.5%		4,279,518

Scenario Two: Maximum Population Estimates & Growth Rate

Year	De Facto Population: Annual Growth Rate	De Facto Population: Forecast Total	X	Per Capita Demand in Square Feet	=	Total Demand in Square Feet	X	Regional Capture Rate (2)	=	Net Regional Demand in Square Feet
2006		81,109		37.00		3,001,033		80.0%		2,400,826
2010	4.55%	99,146		37.75		3,742,762		81.0%		3,031,637
2015	2.68%	114,500		38.50		4,408,250		82.0%		3,614,765
2020	2.43%	130,345		39.25		5,116,041		83.0%		4,246,314
2025	2.36%	147,785		40.00		5,911,400		84.0%		4,965,576

Indicated Projection Mid-Point

Year	De Facto Population: Annual Growth Rate	De Facto Population: Forecast Population	X	Per Capita Demand in Square Feet	=	Total Demand in Square Feet	X	Regional Capture Rate	=	Net Regional Demand in Square Feet
2006		81,109		37.00		3,001,033		80.0%		2,400,826
2010	3.69%	95,146		37.63		3,579,868		80.5%		2,881,794
2015	2.78%	110,500		39.00		4,309,500		80.8%		3,479,921
2020	2.51%	126,345		40.00		5,053,800		81.0%		4,093,578
2025	2.43%	143,785		41.00		5,895,185		81.3%		4,789,838

(1) Per capita demand includes space for retail, restaurant, service, business park, big box, and other similar commercial uses. This includes demand which has historically been located in industrial parks in the islands, estimated at 40% of the total "light industrial" acreage use component.

(2) The Regional Capture Rate is the portion of the entire demand spectrum created by West Hawaii residents which will be focused towards ("captured") by commercial projects in the study area. Fundamentally, this includes "neighborhood" retailers, restaurants and services, just over half the total demand figure, and a variety of specialty and sub-regional businesses. Into the long-term, Greater Kailua-Kona will dominate in regards to regional, big box, and market diversity.

Source: The Hallstrom Group, Inc.

TABLE III-4

ESTIMATED TOTAL COMMERCIAL AND MIXED-USE FLOOR SPACE AND ACREAGE DEMAND IN THE WEST HAWAII STUDY AREA 2006 TO 2025

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Scenario One: Minimum

Year	Forecast Floor Space Demand (in Sq. Ft.)	Divided by FAR Allowance (1)	Resulting Land Area Demand (in Acres)
2006	2,400,826	0.24	230
2010	2,734,380	0.24	262
2015	3,217,365	0.24	308
2020	3,721,123	0.24	356
2025	4,279,518	0.24	409

Scenario Three: Maximum

Year	Forecast Floor Space Demand (in Sq. Ft.)	Divided by FAR Allowance (1)	Resulting Land Area Demand (in Acres)
2006	2,400,826	0.24	230
2010	3,031,637	0.24	290
2015	3,614,765	0.24	346
2020	4,246,314	0.24	406
2025	4,965,576	0.24	475

FINISHED FLOOR SPACE ANALYSIS (in Square Feet)

Total Existing Demand		2,400,826
Estimated Existing Commercial Space (Sq. Ft.):		2,320,000
Current Undersupply or (Oversupply):		**80,826**
Periodic Additions Required (Sq. Ft.):	**Scenario 1**	**Scenario 2**
Latent/Existing Demand	80,826	80,826
2006 to 2010	333,554	630,810
2011 to 2015	482,985	583,128
2015 to 2020	503,758	631,549
2021 to 2025	558,395	719,262
Cumulative Additional Space Required:	**1,959,518**	**2,645,576**
Increase as a Percent of Existing Floor Space	**81.62%**	**110.19%**
Estimated Mid-Point Additional Space Required (2):		**2,416,890**

DEVELOPABLE LAND AREA ANALYSIS (in Acres)

Total Existing Demand		230
Estimated Existing Commercial Development Sites (in Acres.):		223
Current Undersupply or (Oversupply):		**7**
Periodic Additions Required (Sq. Ft.):	**Scenario 1**	**Scenario 2**
Latent/Existing Demand	7	7
2006 to 2010	32	60
2011 to 2015	46	56
2015 to 2020	48	60
2021 to 2025	53	69
Cumulative Additional Acreage Required	**186**	**252**
Increase as a Percent of Existing Acreage:	**81.15%**	**109.72%**
Estimated Mid-Point Additional Space Required (2):		**230**

(1) Assuming average finished "Floor Area Ratio" of .28 for commercial development sites, with a net to gross efficiency on bulk sites of 85%.

(2) Includes existing latent demand in totals.

Source: The Hallstrom Group, Inc.

EXHIBIT IV

TABLE IV-1

SUMMARY OF EXISTING WEST HAWAII MARINA/MOORAGE LOCATIONS
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Name	Capacity	Availability	Monthly Moorage Rates	Amenities
Honokohau Small Boat Harbor	263 slips	146 name wait list	$3.50 lineal foot for resident recreational boats. Plus 10% for non-residents.	2 single and 1 double ramp, fuel dock, washdown/support area restrooms, commercial services. Dry storage available.
Kawaiahae Small Boat Harbor				
North	11 moorings	wait list	$.80 to $1.10 per lineal foot	1 ramp, pier, restroom
South (proposed)	73 to 90 slips	strong interest	To be Determined	Ramps, support and services.
Keauhou Boat Harbor	12 moorings	wait list	$.80 to $1.10 per lineal foot	Double ramp, pier, restroom
Kailua-Kona Wharf	11 moorings	wait list	$.80 to $1.10 per lineal foot	1 ramp, cruise ship port, off-shore moorage, 3 loading areas, vessel washdown, restrooms, showers.

Source: State of Hawaii Division of Boating and Ocean Recreation, and The Hallstrom Group, Inc.

TABLE IV-2

SUMMARY OF MAJOR EXISTING OAHU PUBLIC MARINA/MOORAGE LOCATIONS

Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Name	Capacity	Availability	Monthly Moorage Rates	Amenities
Ala Wai Harbor	699 slips 85 moorings	long wait list	$4.10 lineal foot or resident recreational boats. Plus 10 % or non-residents.	1 ramp, 22 dry storage spaces, fuel dock, washdown/support area restrooms, MSD pumpout, offices.
Keehi Harbor/Lagoon Harbor	389 slips	26 slips available	$3.50 lineal foot for resident recreational boats. Plus 10% for non-residents.	1 ramp, fish hoist, MSD pumpout, vessel washdown, waste disposal, restrooms, showers, office.
Lagoon (off-shore)	202 moorings	some openings	$2.85 lineal foot	Dinghy docks.
Waianae Small Boat Harbor	109 slips	8 slips available	$2.80 lineal foot or resident recreational boats. Plus 10 % or non-residents.	7 ramps, fish hoist, fuel dock, MSD pumpout, restrooms, ice house, store, washdown, showers, offices.
Heeia Kea Small Boat Harbor	21 slips 54 moorings	long wait list	$2.80 lineal foot or resident recreational boats. Plus 10 % or non-residents.	3 ramps, fish hoist, fuel dock, MSD pumpout, restrooms, ice house, washdown, showers, offices.
Haleiwa Harbor	64 slips 26 moorings	long wait list	$2.80 lineal foot or resident recreational boats. Plus 10 % or non-residents.	3 ramps, fish hoist, fuel/loading docks, dry storage, restrooms, washdown, offices.

Source: State of Hawaii Division of Boating and Ocean Recreation, and The Hallstrom Group, Inc.

TABLE IV-3

SUMMARY OF MAJOR EXISTING OAHU PRIVATE MARINA/MOORAGE LOCATIONS

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Name	Capacity	Availability	Monthly Moorage Rates	Amenities
Ko Olina Marina	267 slips	23 slips available	$11.77 per lineal foot to $26.62 lineal foot. Includes water and taxes.	1 ramp, fuel and pumpout docks, store and restaurant, full services to slips, dock boxes, showers, restrooms, laundry, offices.
Koko Marina	99 slips	6 slips available (38' maximum)	$8.03 to $8.29 per lineal foot. Includes water and taxes.	1 ramp, fuel and pumpout areas, services to slips, restrooms, office, adjacent to shopping center.
Keehi Marine Center	160 slips	Full at moment, generally 95% occ.	$9.00 per lineal foot	Automated fuel dock, restrooms, showers, laundry, services to slip, gated parking, security, office.
Kaneohe Yacht Club Marina	170 slips	wait list	$2.15 per lineal foot for berth. $1.15 lineal foot for dry storage. Plus club dues.	1 ramp, 2 hoists, showers, bar, galley, restrooms, security.

Source: Cited marinas and The Hallstrom Group, Inc.

TABLE IV-4

SUMMARY OF SELECTED COMPARABLE MARINA MOORAGE RATES
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Name	Location	Capacity	Monthly Moorage Rates 2004 Low	2004 High	2006 Low	2006 High	Total Pct. Change Over 2 yr Period (1)	Demand for Kona Slips (2)
Oahu								
Ko Olina	Ewa	267 slips	$11.11	$17.51	$11.77	$26.62	52.0%	Very High/Up
Marina Del Rey	Los Angeles							
Bay Harbor Anchorage		255 slips	$8.25	$15.00	$8.55	$16.25	8.3%	High/Up
Bay Club Marina		251 slips	$7.33	$12.00	$7.69	$14.00	16.7%	High/Up
Boatyard Marina		108 slips	$9.60	$15.25	$9.89	$16.80	10.2%	High/Same
Dolphin Marina		478 slips	$8.00	$18.75	$8.75	$19.50	4.0%	High/Same
Marina City Club		340 slips	$9.00	$17.50	$9.79	$19.00	8.6%	High/Up
Marina Harbor		590 slips	$9.00	$18.00	$10.14	$19.25	6.9%	High/Same
Dana Point Harbor	Orange County, CA							
Dana Point Marina		1,400 slips	$9.52	$17.11	$9.96	$18.95	10.8%	Very High/Up
Dana West Marina		1,000 slips	$10.64	$14.00	$12.05	$16.00	14.3%	High/Up
Newport Harbor	Orange County, CA							
BellPort Lido Anchorage		515 slips	$14.50	$27.00	$15.25	$28.50	5.6%	High/Same
Bayside Village		225 slips	$13.85	$22.87	$14.55	$31.00	35.5%	Very High/Up
BellPort Balboa Marina		132 slips	$14.56	$24.95	$19.00	$29.00	16.2%	High/Up
BellPort Bayshore Marina		134 slips	$18.72	$32.35	$20.00	$42.00	29.8%	High/Same
San Francisco Bay								
Pier 39	San Francisco	480 slips	$8.50	$8.61	$8.95	$9.03	4.9%	Moderate/Same
Oyster Point Marina (public)	South SF	600 slips	$6.50	$6.73	$7.27	$7.30	8.5%	Moderate/Same
San Francisco Yacht Club (public)	San Francisco	686 slips	$4.81	$6.18	$5.65	$7.04	13.9%	Moderate/Up
Schoonmaker Point Marina	Sausalito	535 slips	$9.24	$12.41	$10.13	$14.55	17.2%	High/Up
San Leandro Marina	San Leandro	455 slips	$5.90	$7.70	$6.65	$8.65	12.3%	Moderate/Same
Ballena Isle Marina	Alameda	630 slips	$7.08	$10.60	$7.73	$12.89	21.6%	Mod-Hi/Up
Marina Bay	Richmond	850 slips	$6.00	$6.46	$6.99	$8.90	37.8%	Moderate/Same
Puget Sound								
Elliott Bay Marina	Seattle	1,200 slips	$9.58	$12.99	$10.34	$14.06	8.2%	Moderate/Up
Shilshole Bay Marina (public)	Seattle	1,500 slips	$8.71	$11.76	$9.33	$14.50	23.3%	Moderate/Same
Oak Harbor Marina	Oak Harbor	420 slips	$5.86	$8.25	$6.44	$9.07	9.9%	Low/Same
Port of Everett (public)	Everett	2,050 slips	$3.35	$9.99	$4.93	$13.16	31.7%	Low/Same

(1) Based on comparison of "high" rates.
(2) Current level of demand from marina users, and how it has changed over past two years, based on interviews with personnel.

Source: Cited marinas and The Hallstrom Group, Inc.

EXHIBIT V

TABLE V-1

SUMMARY OF SUBJECT PROJECTED DEMAND LEVELS FOR TIMESHARE DEVELOPMENT USING THE MARKET SHARES METHOD

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Assuming 1,800 Total Timeshare Units

With Development to Begin in 2009

Scenario One: Using Conservative Assumption:

Sales Year		Total Regional Timeshare Unit Demand	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	145	30.00%	44
2		145	35.00%	51
3		184	40.00%	74
4		184	40.00%	74
5		184	40.00%	74
6		184	40.00%	74
7		184	40.00%	74
8		225	40.00%	90
9		225	40.00%	90
10		225	40.00%	90
11		225	40.00%	90
12		225	40.00%	90
13		245	40.00%	98
14		245	40.00%	98
15		245	40.00%	98
16		245	40.00%	98
17		245	40.00%	98
18		245	40.00%	98
19		250	40.00%	100
20		250	40.00%	100
21		250	40.00%	100
Totals		**4,555**	**39.52%**	**1,800 Timeshare Units**

21 year absorption period

Scenario Two: Using Optimistic Assumptions

Sales Year		Total Regional Timeshare Unit Demand	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	145	50.00%	73
2		145	55.00%	80
3		184	60.00%	110
4		184	60.00%	110
5		184	60.00%	110
6		184	60.00%	110
7		184	60.00%	110
8		225	60.00%	135
9		225	60.00%	135
10		225	60.00%	135
11		225	60.00%	135
12		225	60.00%	135
13		245	60.00%	147
14		245	60.00%	147
15		245	52.00%	127
Totals		**3,070**	**58.65%**	**1,801 Timeshare Units**

14. 8 year absorption period

ANALYSIS MID-POINT			
17.9 year absorption period	**3,813**	**47.22%**	**1,800**

Source: The Hallstrom Group, Inc.

TABLE V-2

SUMMARY OF SUBJECT PROJECTED DEMAND LEVELS FOR HOTEL DEVELOPMENT USING THE MARKET SHARES METHOD

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Assuming 700 Total Hotel Rooms

With Development to Begin in 2009

Scenario One: Using Conservative Assumptions

Sales Year		Total Regional Hotel Room Demand	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	75	50.00%	38
2		75	55.00%	41
3		95	60.00%	57
4		95	60.00%	57
5		95	60.00%	57
6		95	60.00%	57
7		95	60.00%	57
8		115	60.00%	69
9		115	60.00%	69
10		115	60.00%	69
11		115	60.00%	69
12		115	52.00%	60
Totals		**1,200**	**58.30%**	**700 Hotel Rooms**

11.8 year absorption period

Scenario Two: Using Optimistic Assumptions

Sales Year		Total Regional Hotel Room Demand	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	145	70.00%	102
2		145	75.00%	109
3		160	80.00%	128
4		160	80.00%	128
5		160	80.00%	128
6		160	66.00%	106
Totals		**930**	**75.25%**	**700 Hotel Rooms**

5. 8 year absorption period

ANALYSIS MID-POINT

8.8 year absorption period	**1,065**	**65.70%**	**700**

Source: The Hallstrom Group, Inc

TABLE V-3

SUMMARY OF SUBJECT PROJECTED DEMAND LEVELS FOR RETAIL DEVELOPMENT USING THE MARKET SHARES METHOD

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Assuming 500,000 Total Square Feet of Gross Leaseable Area

With Development to Begin in 2009

Scenario One: Using Conservative Assumptions

Sales Year		Total Regional Retail Space Demand (Sq Ft)	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	82,876	30.00%	24,863
2		82,876	35.00%	29,007
3		112,762	40.00%	45,105
4		112,762	40.00%	45,105
5		112,762	40.00%	45,105
6		112,762	40.00%	45,105
7		112,762	40.00%	45,105
8		116,917	40.00%	46,767
9		116,917	40.00%	46,767
10		116,917	40.00%	46,767
11		116,917	40.00%	46,767
12		127,844	26.50%	33,879
Totals		**1,325,074**	**37.76%**	**500,339 Retail Gross Leaseable Sq. Ft.**
11.8 year absorption period				

Scenario Two: Using Optimistic Assumptions

Sales Year		Total Regional Retail Space Demand (Sq Ft)	Effective Subject Share	Indicated Total Subject Absorption
1	(2009)	142,327	35.00%	49,814
2		142,327	40.00%	56,931
3		132,791	45.00%	59,756
4		132,791	45.00%	59,756
5		132,791	45.00%	59,756
6		132,791	45.00%	59,756
7		132,791	45.00%	59,756
8		142,475	45.00%	64,114
9		142,475	21.50%	30,632
Totals		**815,818**	**61.32%**	**500,271 Retail Gross Leaseable Sq. Ft.**
8. 4 year absorption period				

ANALYSIS MID-POINT			
10.1 year absorption period	**1,070,446**	**46.74%**	**500,305**

Source: The Hallstrom Group, Inc

TABLE V-4

PROJECTION OF SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON TOTAL DEMAND FOR VISITOR UNITS IN THE WEST HAWAII STUDY AREA

Market Study of the Proposed Kona Kai Ola Community

Kealakehe, North Kona, Hawaii

Includes both Hotel Rooms and Timeshare Units

Approved/Announced Units Only, Assuming Mid-Point Demand Trends

Project	TOTAL UNBUILT UNITS	2006-2010	2011-2015	2016-2020	2021-2025
Keauhou Resort	600		600		
Market Share Percentage			45%		
Waikoloa Beach Resort	1,000	250	500	250	
Market Share Percentage		53%	38%	53%	
Central Kailua-Kona	500	125	125	125	125
Market Share Percentage		26%	9%	26%	56%
Other Projects/In-Fill	400	100	100	100	100
Market Share Percentage		21%	8%	21%	44%
Totals	**2,500**	**475**	**1,325**	**475**	**225**
Regional Hotel/Timeshare Unit Demand	**6,650**	**1,275**	**1,585**	**1,815**	**1,975**
Shortage or (Excess) Supply	**4,150**	**800**	**260**	**1,340**	**1,750**
Potential Kona Kai Ola Residual Subject Demand					
at 97.5% Capture Rate	4,046	780	254	1,307	1,706
at 95% Capture Rate	3,943	760	247	1,273	1,663
at 92.5% Capture Rate	3,839	740	241	1,240	1,619

Source: Hawaii County, Developers/Agents, & The Hallstrom Group, Inc.

EXHIBIT VI -- ECONOMIC IMPACT OF THE PROPOSED DEVELOPMENT

The development of the Kona Kai Ola community will generate significant labor efforts and capital expenditures favorably impacting the Big Island economy on both a direct and indirect basis, increasing the level of capital investment, capital growth and capital flow in the region. The project will pump billions of dollars into West Hawaii, expanding the economy, widening the tax base and creating stable long-term employment opportunities.

In addition to the primary economic impacts quantified in this section, the expanded marina, destination shopping center, community facilities, and parks are major capital investments into the foundational health of West Hawaii, providing wide-ranging benefits to the area's economy, culture and lifestyle.

From a direct perspective, the proposed 490-acre mixed-use community and the myriad of uses, businesses and facilities built there-in will create numerous construction, equipment operator and specialty trade jobs on- and off-site during the planning and emplacement of the infrastructure, and building of the improvements. After completion of the lodging, timeshare, marina, commercial and other improvements, there will be significant additional employment positions created via businesses operating in Kona Kai Ola, and from the buildings themselves; such as landscape, service, maintenance, and renovation needs in the course of their use.

At this time, it is envisioned the emplacement of basic infrastructure systems and the initial improvements will require about three years, with "occupancy" of the new community commencing in year 4 of the development process. Additional product and facilities will be added to Kona Kai Ola over the subsequent 14 years, years 4 through 17 of the development period, with full sell-out/absorption achieved by year 18.

Kona Kai Ola will also provide wide-range opportunities for local entrepreneurs, particularly in the retail, restaurant, transient and marina-related sectors. And, it will serve as a needed resource for the West Hawaii labor pool, which will experience a natural growth in

job-seekers of upwards of 1,000 young adults annually during the coming two decades.

Beyond these direct and quantifiable benefits arising from subject development, numerous existing local businesses will enjoy significant profit opportunities arising for contracting companies constructing the improvements, and for local businesses which would supply a substantial portion of the materials needed in the building efforts.

The general island economy also will indirectly benefit from the ongoing subject businesses and wage earning employees, which will spend large amounts in other regional suppliers, shops, restaurants, and service establishments throughout the Big Island, via purchasing day-to-day goods and services.

As these construction wages, profits, business operations, and worker expenditures move through the West Hawaii economy, they will have a ripple, or "multiplier," effect--increasing the amount of capital flowing to the entire island community as a result of the Kona Kai Ola undertaking.

Construction, ongoing businesses, maintenance and other secondary/support workers earning wages in the subject community and associated off-site efforts will spend the majority of their income on living and entertainment expenses while supporting and patronizing other island businesses, as will the moderate to upper income guests of Kona Kai Ola. Much of this spending would then be re-directed by these businesses to other island industries, with significant portions of these secondary profits in turn being put back through the region's economic and tax structure.

These substantial direct and indirect economic impacts associated with the proposed subject project, as quantified in the following sections, are all the result of the capital investment and entrepreneurship necessary to convert a vacant unused holding into a modern, competitive mixed-use community.

Capital Investment and Construction Costs

The subject development will bring an estimated $2.2 billion in direct construction capital into West Hawaii over the 16-year build-out period forecast for the project. A breakdown of the basic expense

items, their respective costs and expenditure over time are summarized on Table VI-1.

Our economic impact analysis and public cost/benefits assessment utilize the same 18-year development time-frame depicting the evolution of the Kona Kai Ola site from its current condition of barren lava with nominal economic benefits into a comprehensive, built-out, fully operational, mixed-use community.

As the project is actualized, according to the following time-line, its impact on the regional economy will increase until reaching stabilization after full absorption and "occupancy."

Development Period	Development Actions
Years 1-3	Community infrastructure is emplaced, including utility systems, roadways, parks, features and support facilities. Initial timeshare, hotel, marina and marina village improvements are also built.
Years 4-16	Occupancy of initial product begins in year 4. Additional phases of lodging, timeshare, marina, retail and other uses constructed, with build-out complete by end of year 16.
Years 17-18	Absorption of final timeshare units is achieved; all other uses will have been fully absorbed by this time. By end of year 18, Kona Kai Ola is fully marketed and operating at stabilized levels.

Also shown on the table are anticipated contractor and supplier profits flowing to local businesses as a result of the project. Cost estimates were taken from the "Kona Kai Ola Hawaii Draft Budget" provided by cost engineers and developer agents within the master planning team. The estimates reflect both the intensive, high-quality of the proposed community (the most expensive infrastructure emplacement in the history of the islands) and escalated construction costs on the Big Island at present.

Infrastructure, sitework, amenities, systems and central facilities expenses are projected at a total of $354.4 million occurring over a three-year, single integrated phase. This item also includes the yacht and fishing clubs, community facilities and expansive water features.

Hotel Construction, of 700 total rooms in three projects, will begin in year 2 (during the infrastructure development) and continue through year 7 of the model. The cumulative direct construction costs for the hotels will be $758.5 million in 2006 dollars. The operations will commence in year 4, commensurate with opening, and years 6 and 8, respectively.

Timeshare Construction, with eight projects housing 1,800 units, will total over $893.0 million during a 14-year build-out period stretching from year 3 through year 16. The first units, forecast to be available in the project's opening year, will fully sell-out by year 18. The interval "club" developments are the dominant use in the community, costing more and taking longer to build and absorb than any other component.

Retail Construction estimates include the central Marina Village and three large highway-fronting building sites, and are projected at $98.9 million in all. However, a relatively low density of improvements is currently being master-planned for the entry and high-exposure lots, with a Floor Area Ratio of .18 per net acre as opposed to a more standard .22 to .28 FAR. Therefore, greater amounts of floor space, construction costs and economic impact is probable. The Marina Village will be the centerpiece of Kona Kai Ola at opening, with the highway-fronting lands built-out over the subsequent five years.

Marina Construction will take place in two phases during years 2 through 5 of the projection model. The initial increment, totaling $83.1 million will include the entire basin, support facilities and dockage for the first 400 slips. The $10.1 million second phase will emplace the remaining docks and build-out the marina-support industrial park, opening in year 6.

Not included in the totals are indirect costs such as marketing and sales expenses; developer fees; loan interest; furniture; fixtures and equipment; and other non-real property items. The inclusion of these "soft cost" could result in a total capital investment at Kona Kai Ola approaching $3 billion.

The direct costs of subject development will infuse an anticipated $137.4 million annually into the Big Island building industry on average over the 16-year build-out period, with much higher totals in years 2 through 4. This is the equivalent of more than 15 percent of recent yearly construction levels on the island (estimated at $900 million in 2005), and will be at its most intense in a period expected to

be somewhat down from recent record-setting construction levels. Indirect expenditures could reach up to an additional $50-plus million per year.

Employment Opportunities Created

Based on indicators provided by the construction of comparable sized projects and Hawaii industry averages, we have estimated the demand for on- and off-site, full-time equivalent employment positions associated with laying of initial infrastructure systems, building of the finished residential structures, and in providing continuing services to the occupied buildings.

The employment opportunities created by the construction of the subject development, its myriad of operating businesses and facilities, long-term site and improvement maintenance, and renovations over time will not all be "new" jobs but will be enhanced opportunities for existing construction trade workers, youths reaching employment age and entering the "trades," and in-place local businesses.

The current construction upsurge has created a larger worker sector in the various trades, who will require continuing development activity across a broad spectrum of building tasks in coming years in order to maintain employment levels.

Kona Kai Ola will provide such mid to extended-term needed employment opportunities in the construction sector, and supply and building support industries during an estimated 16-year site development and component construction period.

Our employment estimates are based on full-time equivalent "worker/years," although one worker/year (or circa 2,000 working hours) may be comprised of many employees involved in specialized tasks of a much shorter duration.

Estimates are based on a 16-year modeling period of project construction beginning with three years of infrastructure emplacement, marina construction and the initial operating and saleable components. This is followed by 13 years of hotel, timeshare and commercial building (model years 4 through 16). It will require another two years (years 17 and 18) for all the timeshare units to be sold/occupied and community build-out effectively reached.

The resulting number of employment opportunities created each year, in total over the projection period, and as stabilized annually are displayed on the top of Table VI-2.

Included in our projections on the table are the full-time equivalent (FTE) off-site and support employment opportunities which will be provided to Big Island businesses as a result of the project. Also shown are the total number of maintenance/landscaping "common element" workers which will be required to service all improvements and sites in the community over time.

The projections are founded on examples provided by various resort and commercial developments undertaken on the neighbor islands over the past decade, and via formulae expressing relationships between total worker wages/benefits and construction/operating tasks and costs. The forecast wages are based on current State of Hawaii Department of Labor and Industry figures for the various positions cited.

Infrastructure and building construction employment forecasts are taken from job counts in similar scale developments, review of project budgets and ratios of direct costs to job creation (assuming an average wage of $58,000/year plus benefits equal to 25 percent of wages). Our analysis assumes one worker/year per $350,000 in contract spending for construction worker positions.

Hotel workers were estimated to number 1.3 full-time equivalent employees per guest room, including ancillary restaurant and retail uses in the facility. The average annual wage for these workers was estimated at $28,000 per year, which includes allowances for "tipped" employees.

Timeshare project workers are forecast at .7 employees per finished interval unit, including any ancillary use positions. The average wage for these positions is also $28,000 per year in 2006 dollars.

Retail employees are assumed to be at the rate of one position for every 350 square feet of gross leasable area, and having an average wage of $26,000 annually (or $13 per hour).

Marina employees include new positions in the expanded marina basin (estimated at 12 full-time equivalent positions) and in the marina industrial park (one per every 500 square feet of finished space and 20

"yard" workers). The average annual pay for these workers is forecast at $16 per hour, or $32,000 annually, on a present basis.

Maintenance and common element staff workers in the built-out community, consist of maintenance, landscaping, repair, installation and renovations jobs, and those in common element businesses. These full-time equivalent positions were estimated at 50 employees each for the Yacht and Fishing Club operations, 40 Dolphin Experience/Marina Center workers, and 30 park/general project upkeep jobs. The average overall pay for these workers is estimated at $32,000 per year.

Off-site employees were conservatively estimated at 33 percent of on-site workers, and are comprised of three groups:

- Numerous off-site building industry positions will also be enhanced by the Kona Kai Ola development, including such jobs as administration, office help, material providers, equipment maintenance and specialty tasks. Analysis of county of Hawaii and neighbor island labor trends from 1980 through 2005 demonstrate a linkage equal to about 20 to 30 percent between the creation of on-site construction positions and direct off-site employment.

- Off-site support businesses, including contractor/retail/counter sales, fuel providers, shipping, storage and professional services will also benefit. A conservative job creation relationship of five to ten percent relative to on-site positions was used (or, one off-site support worker/year for each ten to 20 on-site worker/years).

- Extrapolation of state Department of Business Economic Development and Tourism (DBEDT) data, along with indicators provided by other state agencies and First Hawaiian Bank studies, demonstrate that each Hawaii worker creates demand for services (and related employment) during and directly attributable to the work day at up to a ten percent ratio. These positions include food businesses, providers of tools and trade goods, payroll/financial and insurance businesses, medical requirements and other secondary indirect/off-site employment.

During the 16-year construction modeling period of the project, the number of worker/years created on- and off-site by the development

varies from 539 to 5,108 positions annually, totaling 67,848 worker/years over the entire 18-year build-out/sellout and stabilization projection timeframe. Of this total, 8,730 worker/years (an annual average of 546 positions during the construction period) are direct construction-oriented; 41,093 worker years are in the operations of the hotel, timeshare, retail and marina components; 2,550 are on-going maintenance/common element positions; and 16,835 are off-site worker requirements.

On a stabilized basis after the modeling timeframe, the community will generate some 5,108 permanent full-time equivalent and/or enhanced employment opportunities—3,841 directly related to on-site activities, and 1,267 indirect positions throughout the island.

The average annual on-site job count during the 18-year subject study period of 2,814 positions represents about a 4.43 percent increase from the total jobs presently available on the Big Island (2,814 additional jobs per year to the average in December 2005 job count of 63,500). Despite low unemployment rates of late, this number can be absorbed by the currently available and naturally expanding Big Island worker pool. We do not foresee the need to bring immigrating workers to Hawaii to meet Kona Kai Ola staffing needs.

Wage Income Generated

In accordance with data compiled by the state Department of Labor and Industry Relations, we have estimated the personal income (in the form of wages) which will flow to West Hawaii workers as a result of the Kona Kai Ola community.

The average wage of a full-time infrastructure construction worker is estimated at $58,000 per year (rounded) based on DLIR data for mid-2006. For finished building construction workers, the average annual pay will also be about $58,000. Operating and maintenance personnel are forecast to be paid between $26,000 and $32,000 per year (or $13 to $16 per hour). Off-site building and support industry jobs were estimated to receive an average pay of $36,000 annually.

Overall project average wages are equal to $33,375 per worker/year created during the model period, and $29,615 on a stabilized basis.

Application of these wage estimates to the employment forecasts generates personal income (wage) projections directly resulting from

subject development, which were shown at the bottom of Table VI-2. The wage figures are all presented in constant 2006 dollars, and will undoubtedly escalate over time in accordance with inflationary pressures.

In the first year of development, the "Total Annual Wages Generated" by the subject development effort would be $28.3 million, increasing to a high of $176.4 million, as the number of construction workers peak and many operating and maintenance positions are created in year 16. After completion of all construction, the on-going hotel/timeshare and retail operations, maintenance, off-site/indirect and other employment would result in average annual wages of $151.3 million thereafter.

Over the first 18 years of the development and operation period, on- and off-site, direct and indirect worker wages would total $2.26 billion.

Development Costs as Profit Income

While the significant majority of the materials needed to build the subject infrastructure systems and myriad of finished improvements must be imported to the Big Island, a portion of the construction costs spent in the development will flow to local businesses in the form of contractor profits and supplier profits.

Typically, within the industry net contractor profit margins are expected to be at 8 to 20 percent of total construction costs. We have used a conservative ten percent figure. Supplier profits were extrapolated at four percent of total costs; generally supplies/materials equate to 50 to 60 percent of total cost, with a profit margin for the supplier of six to eight percent.

Application of these estimates to the forecast development parameters of the subject project was shown on Table VI-1.

The total local Contractor's Profit ranges from $2.15 to $30.1 million per year, with a cumulative profit of $219.8 million over the 16-year construction period. The total annual Supplier's Profit ranges from a low of $861,932 to a high of $12.03 million, and equates to $84.4 million over the development time-frame.

De Facto Population and Expenditures

The 2,500 subject "units" (including 700 total rooms and 1,800 timeshare units) will be used by visitors (non-residents) to the Kona Coast. These groups will contribute to the Big Island economy during the use of the subject units in the form of discretionary expenditures, both with Kona Kai Ola businesses and off-site, elsewhere in the region.

Table VI-3 displays our de facto population and discretionary expenditure estimates for the subject project.

For the hotel rooms, it was estimated that 82 percent would be occupied on average, with an average party size of 1.9 persons. This equates to a standard, stabilized daily hotel guest population of 1,091 persons.

The timeshare units are forecast to be occupied at a stabilized rate of 94 percent with an average party size of 2.5 persons. The total population for this component at build-out will be 4,230 persons.

We have not considered the potentials for "live aboard" on marina-docked boats (which will not likely be permitted), nor have we quantified the transient users of the retail, restaurant, marina or other components of the master plan.

At build-out, the stabilized de facto population of the project would be some 5,321 persons, comprised of 1,091 hotel guests and 4,230 timeshare owners and guests.

None of the de facto population will be full-time residents within the Kona Kai Ola community, and there will be no resident school age children.

The population of the project will place significant discretionary expenditure dollars into the Hawaii County economy. In light of the quality of the hotels and cost of the timeshare intervals, the guests and other users will be in the mid to top household income brackets with substantial available income for such spending.

We estimate hotel guests will spend about $200 per day on local discretionary items based on the most recent data. The daily per capita spending by timeshare users, and their guests in the West Hawaii

economy will be on average $150, which is moderately above what the typical Big Island visitor spends daily on non-lodging purchases (commensurate with the relative upscale subject project quality). This pays for all food, entertainment, locally purchased clothing and other daily items.

By build-out, the discretionary expenditures made by subject project guests and interval owner users in the local market will be at $311.2 million annually on a stabilized basis, in 2006 dollars. During the 18-year development and operation model period, the total sum of these expenditures will be $2.87 billion.

On-Site Operating Activity

Table VI-4 displays our projections of on-going economic operating activity for the various businesses within the Kona Kai Ola community from opening in year 4 of the projection model until stabilization in year 18.

The hotel component is estimated to generate $115.6 million annually in gross receipts (2006 dollars) upon stabilization. This is based upon:

1. A 200-room "boutique" project with 82 percent average occupancy, an Average Daily Rate (ADR) of $250 and other income equal to 30 percent of rooms revenue.

2. A 200-room "four star" hotel, with occupancy at 82 percent, ADR of $325, and non-room sales equal to 100 percent of rooms income.

3. A 300-room "three star" facility with occupancy also at 82 percent, ADR of $275, and non-rooms income at 100 percent of room sales.

Each of the eight timeshare projects is assumed to have some limited ancillary facilities (restaurant, spa, shops) with gross sales of $100 per unit in the project per day. At stabilization, the total sales will be at $65.7 million for this component.

The Marina Village retail project is forecast to have gross sales of $1,200 per square foot annually. The highway-fronting centers are projected to have sales at $750 per square foot per year. Total retail

sales in the subject commercial venues will stabilize at $425,000,000 annually.

The marina operations include a stabilized annual income (ship rentals) of $10.48 million within the basin (taken from a pro forma) and an additional $8.4 million per year for the supporting industrial park (based on sales of $350 per square foot of improved space, and 20 percent overage for "yard" operations).

Other operating components total $17 million per year, and include the Yacht and Fishing Club restaurants (with estimated gross sales of $5 million each annually) and the marine science center/dolphin experience ($7 million gross revenue allowances each year).

The total annual on-site operating economic activity within Kona Kai Ola is estimated to increase from $557.6 million in the first year of operations (model year 4), increasing to $551.6 million yearly upon stabilization. Over the course of the 18-year projection time frame, the total operating gross revenues of the various businesses will be $5.12 billion in 2006 dollars.

We have divided the gross sales between guests and non-guests, as also shown on the table. Kona Kai Ola guests will comprise from 10 percent of total revenues at the marina to a high of 90 percent within the three hotels. Non-guest (or those from off-site populations) sales increase from $103.8 million in year 4 to $396.4 million at stabilization and annually thereafter.

Summary of Direct, Local Economic Impacts

The various direct, local economic impacts which will flow to the West Hawaii study region as a result of the subject development are summarized on Table VI-5.

The wages, profits, operating revenues and discretionary expenditures figures are all taken from previously presented tables.

The annual Total Base Economic Impact increases from $46.7 million in year 1 of the development effort to a high of $865 million in year 16 (in 2006 dollars). Over the 18-year long development and operation modeling period, the total is $10.19 billion. Fueled by on-going operations, maintenance and guest expenditures, the estimated stabilized annual base impact thereafter is $858.8 million.

These dollars will be spent, then re-spent, on goods and services on the island, diminishing in impact on the local economy with each turnover as a portion of each spending cycle flows off the Big Island for goods, services and financing commitments. First Hawaiian Bank studies have concluded the appropriate economic multiplier rates in Hawaii are from 1.2 to 3.5 times (or 20 to 250 percent) of the base impact amount. Mainland studies (by the Urban Institute and others) tend toward the upper end of this range, and reach multipliers as high as 4.0.

Due to the need to import more than 85-plus percent of supplies/goods used on the Big Island, the multiplier impact for the island is not as great as for mainland locales, particularly for construction-based expenditures. We have therefore tested multiplier rates at the mid-point of the market spectrum, ranging from 1.5 to 3.5 times.

On a conservative basis, using a relatively low-end multiplier effect ratio of 2.0, the total overall direct impact on the island of Hawaii economy resulting from the Kona Kai Ola community would be $20.38 billion over the 18-year projection period (in constant 2006 dollars). On a stabilized annual basis thereafter, the overall impact would be at $1.72 billion.

TABLE VI-1

CONSTRUCTION COSTS AND CONTRACTOR AND SUPPLIER PROFIT ESTIMATES
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Development Year	2008 1	2	3	4	5	6	7	8	9
	Infrastructure and Initial Product Completed During First Three Years			Occupancy Begins					
Construction Costs (1)									
Infrastructure (2)	$141,749,880	$141,749,880	$70,874,940						
Hotel Construction		$29,337,000	$29,337,000	$169,667,300	$169,667,300	$180,259,150	$180,259,150		
Timeshare Construction			$112,320,100	$106,636,400		$110,550,700		$110,550,700	
Retail Construction (3)		$22,922,250	$22,922,250	$19,506,600		$11,989,600			$21,548,300
Marina Construction (4)		$41,551,000	$41,551,000	$5,060,700	$5,060,700				
TOTAL CONSTRUCTION COSTS	$141,749,880	$235,560,130	$277,005,290	$300,871,000	$174,728,000	$302,799,450	$180,259,150	$110,550,700	$21,548,300
CONTRACTOR'S PROFIT	$14,174,988	$23,556,013	$27,700,529	$30,087,100	$17,472,800	$30,279,945	$18,025,915	$11,055,070	$2,154,830
SUPPLIER'S PROFIT	$4,252,496	$8,004,906	$10,371,462	$12,034,840	$6,989,120	$12,111,978	$7,210,366	$4,422,028	$861,932

Development Year	10	11	12	13	14	15	16	17	18	Totals
							Build-Out Completed		Absorption Completed	
Construction Costs (1)										
Infrastructure (2)										$354,374,699
Hotel Construction										$758,526,900
Timeshare Construction	$112,320,100		$113,806,400		$114,588,200		$112,320,100			$893,092,700
Retail Construction (3)										$98,889,000
Marina Construction (4)										$93,223,400
TOTAL CONSTRUCTION COSTS	$112,320,100		$113,806,400		$114,588,200		$112,320,100			$2,198,106,699
CONTRACTOR'S PROFIT	$11,232,010		$11,380,640		$11,458,820		$11,232,010			$219,810,670
SUPPLIER'S PROFIT	$4,492,804		$4,552,256		$4,583,528		$4,492,804			$84,380,521

(1) From "Kona Kai Ola -- Hawaii Draft Budget". Direct Costs only with the exception of Initial Phase "Design Fees" of $41.9 million which are placed in the "Infrastructure" category. Does not include contingency allowance.
(2) Includes all on-site roadway and utility system improvements, support facilities, parks, community features and centers, yacht and fishing clubs, and landscaping. Estimated to start in 2008 and require 30 months to complete.
(3) Includes Marina Village (initial project) opening in Year 4, and highway-fronting commercial development opening in Year 5 and expanding through Year 9.
(4) Includes Marina Basin and 1/2 of the dockage in initial phase, remainder of dockage and marina industrial in second increment.

Source: Kona Kai Ola-Hawaii Draft Budget, and The Hallstrom Group, Inc.

TABLE VI-2

EMPLOYEE JOB COUNT AND WAGE ESTIMATES
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
In Constant 2006 Dollars

Development Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Build-Out Completed 16	Last Project Opens 17	Sell-Out & Community Stabilized 18	Totals
Worker Requirements (1)																			
Infrastructure Construction (2)	405	405	202																1,012
Hotel Construction (3)		117	117	679	679	721	721												3,034
Timeshare Construction (3)			449	427		442		442		449	#	455		458		449			4,022
Retail Construction (3)		92	92	78		48			86										396
Marina Construction (2)		119	119	14	14														266
Hotel Employees (4)				260	260	650	650	910	910	910	910 #	910	910	910	910	910	910	910	12,740
Timeshare Employees (5)				158	315	315	473	473	630	630	788	788	945	945	1,103	1,103	1,260	1,260	11,183
Retail Tenant Employees (6)				214	429	571	714	857	1,000	1,143	1,286	1,429	1,429	1,429	1,429	1,429	1,429	1,429	16,214
Marina Employees (7)				10	10	72	72	72	72	72	72	72	72	72	72	72	72	72	956
Maint. & Common Element Staff (8)				170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	2,550
Off-Site Employees (9)	134	242	323	663	619	987	924	965	947	1,113	1,064	1,262	1,163	1,315	1,215	1,364	1,267	1,267	16,835
TOTAL EMPLOYMENT CREATED	539	975	1,303	2,673	2,496	3,976	3,724	3,889	3,815	4,488	4,290	5,085	4,689	5,299	4,898	5,496	5,108	5,108	67,848
Worker Wages																			
Infrastructure (10)	$23,489,980	$23,489,980	$11,744,990	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$58,724,950
Hotel Construction (10)	$0	$6,806,184	$6,806,184	$39,362,814	$39,362,814	$41,820,123	$41,820,123	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$175,978,241
Timeshare Construction (10)	$0	$0	$26,058,263	$24,739,645	$0	$25,647,762	$0	$25,647,762	$0	$26,058,263	$0	$26,403,085	$0	$26,584,462	$0	$26,058,263	$0	$0	$207,197,506
Retail Construction (10)	$0	$5,317,962	$5,317,962	$4,525,531	$0	$2,781,587	$0	$0	$4,999,206	$0	$0	$0	$0	$0	$0	$0	$0	$0	$22,942,248
Marina Construction (10)	$0	$6,885,594	$6,885,594	$838,630	$838,630	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,448,449
Hotel Employees (11)	$0	$0	$0	$7,280,000	$7,280,000	$18,200,000	$18,200,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$25,480,000	$331,240,000
Timeshare Employees (11)	$0	$0	$0	$4,410,000	$8,820,000	$8,820,000	$13,230,000	$13,230,000	$17,640,000	$17,640,000	$22,050,000	$22,050,000	$26,460,000	$26,460,000	$30,870,000	$30,870,000	$35,280,000	$35,280,000	$313,110,000
Retail Tenant Employees (12)	$0	$0	$0	$5,571,429	$11,142,857	$14,857,143	$18,571,429	$22,285,714	$26,000,000	$29,714,286	$33,428,571	$37,142,857	$37,142,857	$37,142,857	$37,142,857	$37,142,857	$37,142,857	$37,142,857	$421,571,429
Marina Employees (13)	$0	$0	$0	$320,000	$320,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$2,304,000	$30,592,000
Maint. & Common Element Staff (13)	$0	$0	$0	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$5,440,000	$81,600,000
Off-Site Employees (14)	$4,811,396	$8,705,115	$11,636,868	$23,872,694	$22,295,193	$35,516,761	$33,261,889	$34,735,286	$34,074,135	$40,084,754	$38,315,546	$45,420,769	$41,883,789	$47,329,020	$43,754,889	$49,092,340	$45,625,989	$45,625,989	$606,042,421
TOTAL ANNUAL WAGES PAID	$28,301,376	$51,204,836	$68,449,862	$116,360,743	$95,499,494	$155,387,377	$132,827,440	$129,122,763	$115,937,341	$146,721,303	$127,018,117	$164,240,711	$138,710,646	$170,740,339	$144,991,746	$176,387,460	$151,272,846	$151,272,846	$2,264,447,245

(1) All job counts expressed as "full-time" equivalent positions
(2) Based on one worker year for every $350,000 in construction costs
(2) Based on one worker year for every $250,000 in construction costs
(4) Based on 1.3 workers per hotel room (including food &beverage and ancillary in-hotel uses)
(5) Based on 0.7 workers per timeshare unit (includes any ancillary in-project uses)
(6) Based on one worker for every 350 square feet of floor space.
(7) Includes "new" in harbor employees (beyond those currently employed at existing harbor) and marine industrial area at one employee per 500 square feet of finished space and allowance of 20 "yard" employees
(8) Includes employees at Yacht & Fishing Clubs (considered as restaurants-plus with 50 employees each), marine science center & dolphin experience 40 employees, and 50 park/maintenance/general/community employee
(9) Off-site employees at 33% of on-site workers.
(10) Based on average annual wages of $58,000 ($29 per hour).
(11) Based on average annual wages of $28,000 ($13 per hour average plus allowance for tipped employees)
(12) Based on average annual wage of $26,000 ($13 per hour).
(13) Based on average annual wage of $32,000 ($16 per hour).
(14) Based on average annual wage of $36,000 ($18 per hour).

Source: Various, and The Hallstrom Group, Inc.

TABLE VI-3

DE FACTO POPULATION AND DISCRETIONARY EXPENDITURE
Market Study of the Proposed Kona Kai Ola Community
Keahakehe, North Kona, Hawaii
In Constant Year 2006 Dollars

Development Year	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Stabilized 18
Cumulative Hotel and Timeshare Development															
Hotel Room Development	200	200	500	500	700	700	700	700	700	700	700	700	700	700	700
Timeshare Unit Absorption	100	205	315	430	550	675	800	925	1,050	1,175	1,300	1,425	1,550	1,975	1,800
Total Finished Rooms/units	300	405	815	930	1,250	1,375	1,500	1,625	1,750	1,875	2,000	2,125	2,250	2,675	2,500
Average Daily Resident/Guest Population															
Hotel Rooms (1)	312	312	779	779	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091	1,091
Timeshare Units (2)	235	482	740	1,011	1,293	1,586	1,880	2,174	2,468	2,761	3,055	3,349	3,643	4,641	4,230
Total De Facto Population	547	793	1,519	1,790	2,383	2,677	2,971	3,264	3,558	3,852	4,146	4,439	4,733	5,732	5,321
Total Full-Time Resident Population	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Estimated Public School Children	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GUEST/USER DISCRETIONARY (TAXABLE) EXPENDITURES (3)	$35,613,050	$49,122,613	$97,395,688	$112,191,875	$150,378,175	$166,460,988	$182,543,800	$198,626,613	$214,709,425	$230,792,238	$246,875,050	$262,957,863	$279,040,675	$333,722,238	$311,206,300
Total Years 4-18	$2,871,636,588														

(1) Assumes stabilized occupancy of 82% with average party size of 1.9 persons per room.
(2) Assumes stabilized occupancy of 94% with average party size of 2.5 persons per unit.
(3) Based on average daily per person hotel guest expenditures of $200 and daily per person timeshare user expenditure of $150. both figures are 25 percent above statewide averages, reflective of the new, upscale nature of the subject community.

Source: Various, and The Hallstrom Group, Inc.

TABLE VI-4

PROJECTION OF OPERATING ECONOMIC ACTIVIT
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
In Constant 2006 Dollars

Development Year	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
1. Hotel Component (1)																
Total Finished Rooms	200	200	500	500	700	700	700	700	700	700	700	700	700	700	700	
Average Gross $/Room/Yr.	$97,272	$97,272	$97,272	$165,689	$165,689	$165,689	$165,689	$165,205	$165,205	$165,205	$165,205	$165,205	$165,205	$165,205	$165,205	
Annual Gross Sales	$19,454,400	$19,454,400	$48,636,000	$82,844,500	$115,982,300	$115,982,300	$115,982,300	$115,643,500	$115,643,500	$115,643,500	$115,643,500	$115,643,500	$115,643,500	$115,643,500	$115,643,500	$1,096,553,700
Guest Percentage	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Non-Guest Revenues	$1,945,440	$1,945,440	$4,863,600	$8,284,450	$11,598,230	$11,598,230	$11,598,230	$11,564,350	$11,564,350	$11,564,350	$11,564,350	$11,564,350	$11,564,350	$11,564,350	$11,564,350	$109,655,370
2. Timeshare Component (2)																
Total Sold Units/Occupied	100	205	315	430	550	675	800	925	1,050	1,175	1,300	1,425	1,550	1,675	1,800	
Average Gross $/Unit/Yr	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	$36,500	
Annual Gross Sales	$3,650,000	$7,482,500	$11,497,500	$15,695,000	$20,075,000	$24,637,500	$29,200,000	$33,762,500	$38,325,000	$42,887,500	$47,450,000	$52,012,500	$56,575,000	$61,137,500	$65,700,000	$326,675,000
Guest Percentage	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Non-Guest Revenues	$912,500	$1,870,625	$2,874,375	$3,923,750	$5,018,750	$6,159,375	$7,300,000	$8,440,625	$9,581,250	$10,721,875	$11,862,500	$13,003,125	$14,143,750	$15,284,375	$16,425,000	$81,668,750
3. Retail Component (3)																
Total Square Feet	75,000	150,000	200,000	250,000	300,000	350,000	400,000	450,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	
Average $/SF/Yr	$1,200	$1,050	$1,025	$1,000	$975	$950	$925	$900	$875	$850	$850	$850	$850	$850	$850	
Total Sales/Year	$90,000,000	$157,500,000	$205,000,000	$250,000,000	$292,500,000	$332,500,000	$370,000,000	$405,000,000	$437,500,000	$425,000,000	$425,000,000	$425,000,000	$425,000,000	$425,000,000	$425,000,000	$3,815,000,000
Guest Percentage	10%	15%	20%	18%	20%	22%	18%	19%	20%	20%	20%	20%	20%	20%	20%	16%
Non-Guest Revenues	$81,000,000	$133,875,000	$164,000,000	$205,000,000	$234,000,000	$259,350,000	$303,400,000	$328,050,000	$350,000,000	$340,000,000	$340,000,000	$340,000,000	$340,000,000	$340,000,000	$340,000,000	$3,210,050,000
5. Marina Component (4)																
Basin Revenues	$5,198,272	$5,553,144	$5,767,314	$5,203,999	$5,845,650	$6,532,208	$7,266,236	$8,050,436	$8,887,645	$9,780,851	$9,779,985	$10,461,539	$10,461,539	$10,461,539	$10,461,539	
Marina-Support/Industrial			$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	$8,400,000	
Total Sales/Year	$5,198,272	$5,553,144	$14,167,314	$13,603,999	$14,245,650	$14,932,208	$15,666,236	$16,450,436	$17,287,645	$18,180,851	$18,179,985	$18,861,539	$18,861,539	$18,861,539	$18,861,539	$172,327,279
Guest Percentage	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Non-Guest Revenues	$4,678,445	$4,997,829	$12,750,583	$12,243,599	$12,821,085	$13,438,987	$14,099,613	$14,805,392	$15,558,881	$16,362,766	$16,361,986	$16,975,385	$16,975,385	$16,975,385	$16,975,385	$155,094,551
4. Other Operating Components (5)																
Total Sales/Year	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$204,000,000
Guest Percentage	10%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Non-Guest Revenues	$15,300,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$11,390,000	$136,680,000
ANNUAL OPERATING ECONOMIC ACTIVIT	$135,302,672	$193,954,400	$270,636,000	$349,844,500	$425,482,300	$465,482,300	$502,982,300	$537,643,500	$570,143,500	$557,643,500	$557,643,500	$557,643,500	$557,643,500	$557,643,500	$557,643,500	$5,124,401,972
Non-Guest Spending	$103,836,385	$154,078,894	$195,878,558	$240,841,799	$274,828,065	$301,936,592	$347,787,843	$374,250,367	$398,094,481	$390,038,991	$391,178,836	$392,932,860	$394,073,485	$395,214,110	$396,354,735	$3,565,683,671

Note: All estimates assumes full-occupancy of available space.

(1) 200-room "Boutique" hotel assumed to have ADR of $250 with other income at 30% of rooms. 200-room "Five-Star" hotel with ADR of $325 and other income at 100% of rooms. 300-room "Four Star" hotel at ADR of $275 and other income of 100%. All assumed to be at stabilized occupancy of 82%
(2) Each of the nine timeshare project assumed to have some, limited ancillary facilities such as a restaurant, spa, sundry shop, boutique, etc., with total sales averaging $100 per sold unit per day
(3) Sales at Marina Village estimated at $1,200/SF annually, with resort guests accounting for one-third of total sales. Sales in highway-fronting retail centers estimated at $750/SF annually, with resort guests accounting for 15% of total sales.
(4) Basin revenues taken from pro forma. Marina-Support/Industrial based on sales of $350 per square foot for 20,000 SF of floor area plus 20 percent for yard storage rentals and work areas.
(5) Includes Yacht Club and Fishing Club at $5 million in gross sales each per year and Marine Science Center/Dolphin Experience with $7 million in gross sales

Source: The Hallstrom Group, Inc.

TABLE VI-5

SUMMARY OF ECONOMIC IMPACTS ASSOCIATED WITH DEVELOPMENT
Market Study of the Proposed Kona Kai Ola Community
Keauhou, North Kona, Hawaii
In Constant 2006 Dollars

Development Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total Years 1 Through 18	Stabilized
ANNUAL WAGES GENERATED	$28,301,376	$51,204,836	$68,449,862	$116,360,743	$95,499,494	$155,387,377	$132,827,440	$129,122,763	$115,937,341	$146,721,303	$127,018,117	$164,240,711	$138,710,646	$170,740,339	$144,991,746	$176,387,460	$151,272,846	$151,272,846	$2,264,447,245	$151,272,846
CONTRACTOR'S PROFIT	$14,174,988	$23,556,013	$27,700,529	$30,087,100	$17,472,800	$30,279,945	$18,025,915	$11,055,070	$2,154,830	$11,232,010		$11,380,640		$11,458,820		$11,232,010			$219,810,670	
SUPPLIER'S PROFIT	$4,252,496	$8,004,906	$10,371,462	$12,034,840	$6,989,120	$12,111,978	$7,210,366	$4,422,028	$861,932	$4,492,804		$4,552,256		$4,583,528		$4,492,804			$84,380,521	
GROSS OPERATING REVENUES (Non-Guest)				$103,836,385	$154,078,894	$195,878,558	$240,841,799	$274,828,065	$301,936,592	$347,787,843	$374,250,367	$398,094,481	$390,038,991	$391,178,836	$392,932,860	$394,073,485	$395,214,110	$396,354,735	$4,751,326,001	$396,354,735
DISCRETIONARY EXPENDITURES (Guest/Users On & Off-Site				$35,613,050	$49,122,613	$97,395,688	$112,191,875	$150,378,175	$166,460,988	$182,543,800	$198,626,613	$214,709,425	$230,792,238	$246,875,050	$262,957,863	$279,040,675	$333,722,238	$311,206,300	$2,871,636,588	$311,206,300
TOTAL BASE ECONOMIC IMPACT	$46,728,860	$82,765,755	$106,521,853	$297,932,118	$323,162,921	$491,053,545	$511,097,395	$569,806,101	$587,351,682	$692,777,760	$699,895,097	$792,977,512	$759,541,874	$824,836,574	$800,882,468	$865,226,434	$880,209,193	$858,833,881	$10,191,601,024	$858,833,881
Multiplier Effect Ratio	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
TOTAL OVERALL IMPACT	$93,457,721	$165,531,510	$213,043,706	$595,864,235	$646,325,842	$982,107,090	$1,022,194,791	$1,139,612,203	$1,174,703,364	$1,385,555,519	$1,399,790,194	$1,585,955,025	$1,519,083,748	$1,649,673,147	$1,601,764,936	$1,730,452,868	$1,760,418,386	$1,717,667,761	$20,383,202,047	$1,717,667,761

(1) Estimated at $1,000 per house per month.

Source: Various, and The Hallstrom Group, I

EXHIBIT VII -- PUBLIC COSTS/BENEFITS ASSESSMENT

The purpose of this analysis is to delineate the direct areas in which the proposed subject community will potentially impact the sphere of public agency resources on the Big Island and statewide, and quantify (where possible) the costs of providing expanded services to the project versus the economic benefits that accrue to the community through an increase in local and state tax payments.

For most developments, potential direct costs to governmental services and programs include:

-- Police Protection
-- Fire Protection
-- Public Oversight Agencies
-- Infrastructure Services
-- Recreational Demands
-- Educational Needs
-- Infrastructure Costs
-- Various Other Services and Financial Commitments

However, as a privately built, comprehensive, master planned project, many of these costs will not be increased on the state or county levels as a direct result of the proposed Kona Kai Ola. There will be increased needs for emergency services, some additional road/frontage maintenance, and off-site recreational needs directly attributable to the subject development. But, the major off-site public infrastructure items are already in place; there are emergency services across the highway from the property (or within five miles); and it is anticipated the development will require no specific public subsidies, welfare services, bonding or capital improvements.

The singular exception to minimal infrastructure impacts will be in regards to expansion of regional water source and storage capacity in order to service Kona Kai Ola with an estimated 2.6 million gallons daily. However, this expansion will be necessary to service K-to-K corridor urbanization even apart from the subject development. And, the cost of expansion will be recaptured via hook-up fees, usage charges and developer contributions.

Direct tax benefits to the state and county coffers will primarily flow from the project and its operation over time from three major sources:

-- Real Property Taxes
-- Gross Excise Receipts
-- State Income Taxes
-- Transient Accommodation Taxes

Some cost/benefit issues are considered as off-setting, or "a wash," as the cost of the services to the government is theoretically directly reimbursed in the form of user fees. Building permits and utility hook-up fees are two prime examples. Other such items include workers compensation premiums and benefits, utility operations and associated use billing rates, and business oversight/registration verses licensing fees. These secondary items are excluded from this study.

A concern of this analysis is the integration of the subject project into the overall state and county of Hawaii governmental services plan on both an actual and pro rata perspective.

From an actual public service cost perspective to the Big Island and state agencies, Kona Kai Ola will represent only a fraction of the county and state transient inventory and overall urban lands in use. Given the vast number of housing units, resorts, businesses, and agricultural lands on the island, it is difficult to assert that of themselves the subject businesses, guests, interval owners and users will create the need for meaningful expansion of existing public services.

No new schools, parks, highways, recreational facilities, service agencies, hospitals, or other public enterprises will be required specifically because of the new transient/marina project. The impact on the total regional land base will be minimal. Public safety facilities in the Kailua-Keahole corridor and in greater Kailua-Kona are reasonably to very proximate, generally have the existing personnel and equipment to service the businesses "population" and buildings in the development, and will be expanded in the coastal corridor in conjunction with anticipated regional community growth over the next two decades as the various other identified projects with their many thousands of units, millions of square feet of commercial and industrial space, and major civic facilities are built.

However, the need for additional services is a cumulative effect, each project, each resident, tourist and, to a lesser degree, business adds a little bit to the community base until increased "need thresholds" are reached.

In regard to some services, the effective actual impact of Kona Kai Ola may not be apparent from a cost perspective, merely creating nominally greater demands which can be readily met through existing agencies and facilities without the need for additional workers or funds.

Our analysis of county of Hawaii and state budgets indicate the actual effect of governmental services relating to the subject would not create the need to meaningfully expand county and state services in and of itself.

As an alternative to actual cost estimates, which are often disparate as they inherently cannot provide for indirect, unexpected and/or atypical items, it is most common to project public costs for a proposed development on a per capita allocation.

This approach is generally appropriate for a transient community, as the substantial portion, but not entirety of public costs and services generally accrue to where a person lives (or in the case of a tourist, where they are lodging). Further, it allows the broad spectrum of governmental services to be adequately addressed, including secondary and indirect items, which may be insufficiently quantified from an actual cost perspective.

Government services are holistic in nature, providing a foundation throughout a community, regardless of actual or specific impact on any given land holding. A transient development or business may not have a need for parks or schools, but they are essential to the patrons and workers and create the climate in which the development or business operates. Similarly, government administration, capital projects and public welfare items may have no direct relation to a particular project, but provide the economic underpinnings that enhances overall economic success and quality of life for its residents.

In order to meaningfully quantify public costs that may be associated with the subject development, we have therefore looked at the issue from both perspectives, on an actual cost basis and on a per capita allocation basis.

Public Costs

Actual Costs

The county of Hawaii will directly incur several areas of cost increases as a result of the Kona Kai Ola project, primarily in regards to emergency services. Based on analysis of response frequencies, time/cost data, and past discussions with affected agencies, we have made general allowances for these items as summarized below.

Police/Enforcement -- Using a base cost of $175 per hour for a responding officer (wages and benefits for responding/support/ administrative personnel, overhead, capital costs, and amortized equipment), we estimate the annual additional police/enforcement cost to the county of Hawaii on a stabilized basis after project build-out will be about $497,000.

This is comprised of:

- Ten miscellaneous calls per week at an average of two total officer hours each. (2 hrs. x $175/hr. x 10 x 52 = $182,000)
- Ten "minor" incidents/traffic accidents each month requiring on average five hours of officer time. (5 hrs. x $175 x 10 x 12 = $105,000)
- Five "major" incidents/traffic accidents each month requiring on average of 20 hours of officer time. (20 hrs. x $175 x 5 x 12 = $210,000)

This demand of 2,840 hours is the equivalent to 1.42 new full-time equivalent officers (2,000 total hours per position).

Fire Protection -- Our forecasts are based on a crew cost of $1,200/hour (four to five firemen, wages, benefits, overhead and amortized equipment). Using this method, we estimate that at build-out, the yearly additional costs to the county of Hawaii resulting from Kona Kai Ola is $676,800 per year.

This is comprised of:

- Five "minor" fire/rescue events per month requiring one crew for a total of three hours (response and/or clean-up). (3 hrs. x $1,200/hr. x 5 x 12 = $216,000)

- Two "major" fire/rescue events every month requiring two crews for a total of eight hours each. (2 crews x 8 hrs. x $1,200/hr. x 2 x 12 = $460,800)

Emergency Medical Response -- This is based on average cost per response of $800, with an average of ten calls per month. The total cost to the county would be $96,000 per year on a stabilized basis after build-out. ($800/response x 10 per month x 12 = $96,000)

The police, fire and emergency services estimates are higher than typical for an urban community of this acreage due to the intense transient use and the 800-slip marina (which presents atypical situations).

Road and System Maintenance -- The roadways and infrastructure systems will be predominately privately owned and funded by Kona Kai Ola developers and end-user guests and businesses. The county should have only minor operating, upkeep, and frontage costs; and we have made an allowance of $200,000 per year for related maintenance, inspections and various oversight duties.

The total annual "actual" cost to the county on a stabilized basis at build out of the subject development is estimated at $1.47 million. This cost would be reached on an escalating basis over time, beginning in year 4, when the initial portions are opened, and increasing as the community is finished and populated.

State of Hawaii costs would include nearby frontage work on Queen Kaahumanu Highway, inspections and other minor oversight duties. An allowance of $500,000 per year was made for these items, increasing to the stabilized level as the project is built out.

As a fully transient community with no residential component, there will be no school-age children at Kona Kai Ola, and no public educational costs to the state.

The total state costs on an "actual" stabilized basis would be about $500,000 annually (maximum).

Per Capita Costs

An alternative method for determining public costs is through per capita expenditures incurred by the State of Hawaii and county of Hawaii in accordance with the de facto population area of the jurisdiction. This is founded on the principal that each individual on

the island equitably benefits from all governmental costs, regardless of type or focus throughout the day, with each new member of the community (whether resident or visitor) creating a proportionate new cost burden in their daily home, visiting and/or working life.

As previously noted, this is the standard method for transient and residential applications as the majority of costs are viewed as accruing to the housing or lodging aspects of a persons lifestyle and land use. We have included it as a means of demonstrating the overall public fiscal impact potential of the proposed subject project even when viewed from this maximum potential cost perspective. We consider this approach as setting the absolute upper limit on all public costs (actual, indirect and inferred) for the proposed Kona Kai Ola community.

Not all public costs accrue solely to a persons place of residence. Government services and oversight are also a vital component of the commercial community, and industrial, transient and retail/service land uses must also bear a proportionate share of their operational and consumer-related public expenses.

Generally, it is highly appropriate to allocate the costs of governmental services between residential/lodging and other uses, typically with two-thirds of each persons per capita governmental services impact being attributable to their dwelling place; the other third to the non-residential uses they patronize.

In the case of an all-tourist project with no residential component, it is appropriate to place 100 percent of the de facto population per capita cost on the project; thus capturing the entirety of the expenses of governmental services on-site.

For the subject project analysis, we have made the traditional (and exceptionally conservative) allocation of 100 percent of the per capita governmental costs of the additional de facto population to the place of their lodging/residence. This results in an absolute maximum amount of public costs which could be accorded to Kona Kai Ola businesses, users, interval owners and guests.

According to the state Department of Budget and Finance database, the state will spend a total of $9.6 billion on services, salaries, infrastructure, and financing in fiscal 2007. The total de facto population in the state on an average daily basis at present is about

1,400,000 persons, including residents, tourists, and military personnel.

The per capita expenditure by the state will thus be about $6,861.17 for FY 2007, about an eight percent increase from FY 2006. From 1979 through 2006, state government expenditures increased at a rate of about five percent annually compounded.

The stabilized average de facto population on-site at the subject at build-out will be 5,321 persons, a figure reached in year 18 of the development model. Using the allocated state cost per de facto "resident" of $6,861.17 per year, the total annual "costs" to the state purse at stabilization by the project using the per capita method would be $36.51 million (rounded) in constant year 2006 dollars.

Analyzed on a similar basis, Hawaii County's budget for the local government in the current fiscal year is $281,455,372, which represents an escalation over time of more than four percent compounded annually since 1995.

The current de facto population on the Big Island is some 195,000 persons. The resulting de facto per capita county expenditure for this year is therefore anticipated to be about $1,443.36.

Comprehensive services attributable to Kona Kai Ola on a per capita basis at build out would be about $7.68 million (rounded) annually in costs to the county government on a stabilized basis (5,321 de facto residents x $1,443).

Total Public Costs -- On a per capita allowance cost basis, the state and county expenses associated with the subject development would range from $4.54 million in year 4 of the project (the first year of hotel/interval occupancy) to a stabilized maximum of $44.18 million at sell-out in year 18 and beyond, in constant 2006 dollars.

On an actual cost basis, which we acknowledge may be an atypical perspective and a minimized accounting of direct expenditures, the total governmental costs at build-out to the state and county would be just under $1.5 million annually.

Public Fiscal Benefits

Real Property Taxes -- Property taxes paid by landowners in the subject project were calculated using the 2006 tax rates for both land and buildings, improved or unimproved.

The assessed values for the improvements were based upon the estimated direct costs for each component. This may be a slight understatement as market value assessments usually take into account indirect, financing, profits and other costs which would inure to the structures. The total estimated assessed values of the taxable finished hotels, timeshare units, commercial, industrial and other improvements upon completion is $1.79 billion in current dollars.

The assessed values for the land component was estimated at $134.25 million (537 gross acres before construction of the marina basin at $250,000 per acre) for the site in its pre-developed state during year 1 of our model.

"As Is," it was assumed the site would be taxed as urban (or other non-homeowner vacant land type) at the rate of $9.00 per $1,000 assessed valuation. After infrastructure emplacement and community facilities development, the various "saleable" building sites would have an underlying value estimated at $405.1 million. This estimate is based on current market values for resort and commercial sites in West Hawaii, with forecast subject fee simple values ranging from $700,000 to $2.5 million per usable acre. The finished marina basin is considered as untaxable area.

The current effective rate for a resort, commercial and industrial land and improvements is at $9.00 per $1,000 of assessed value annually. The land component may be slightly overstated in years 4 through 7 (or so), as it is assumed all the building lots are finished and assessed in a single phase completed in year 4. There may be some phasing which serves to limit the initial property taxes on the finished land component.

All real property value of the subject holding is assumed to be vested in the completed "salable" and operating components, with no assessment placed against open spaces, roads, parks, community/civic facilities or other systems.

At stabilization, the effective overall tax rates for both the lands and improvements at Kona Kai Ola is assumed to be at the current rate of $9.00 per $1,000 of assessed value. The total real property tax to be paid to Hawaii County in 2006 dollars ranges from $1,208,250 in year 1 of development, to a stabilized level of $19.76 million at build-out after year 16. The aggregate real property taxes paid over the 18-year study time-frame will be $233.57 million.

State Income Tax -- The state will receive income taxes from three sources:

- the wages of the workers associated with the construction of the Kona Kai Ola components;
- the wages of the workers in the hotel, timeshare, retail, restaurant, marina and other on-going businesses in the community; and
- the corporate profits from contractors and suppliers serving the construction phase of the development, and as generated by on-going businesses, maintenance and visitor operations.

According to DBEDT data, individual State of Hawaii income tax liability as a ratio to gross income has ranged from 4.7 to just over six percent during the past decade, with the more current figures tending toward the mid to upper-end of the range. We have employed an effective tax rate of 5.82 percent of gross income for individual workers based on the most recent 2003-2005 available state data. This rate was applied against the employee wage estimates contained in the Economic Impact Analysis.

The effective tax rate for the corporate income is estimated at 2.0 percent of gross operating profits, based on available DBEDT statistics.

The profit margins for contractor and supplier businesses was estimated at an overall rate of ten percent of gross revenues. For on-site commercial, marina, industrial and lodging operations an eight percent net profit margin was assumed. For off-site purchases by Kona Kai Ola guests, the profit margin was projected at ten percent of discretionary expenditures.

The total income tax revenues to be received by the state are projected at $2.01 million in the first year of construction increasing to a maximum level at year 16 of $10.23 million in constant 2006 dollars.

On a stabilized basis, after sell-out in year 18, the permanent retail, hotel, timeshare, maintenance and other on-site "operating workers," along with off-site worker contributions, would pay an annual state income tax of $8.77 million. Over the 18-year modeling period, the cumulative income taxes paid are estimated at $146.71 million.

We have not included any corporate income or other taxes which will be paid by the developers as a result of their profits from undertaking the subject development and sales, or from the secondary jobs created by the discretionary spending of workers and businesses. Such items have the potential to be substantial contributions to the state coffers.

State Gross Excise Tax -- This 4.166 percent of expenditures tax was applied against:

- the total estimated construction contract costs;
- the total gross sales of the various on-going, on-site businesses; and
- the discretionary expenditures of the de facto guest and worker populations of the subject.

Again, each of these items were projected in the foregoing Economic Impact Analysis.

The anticipated state excise tax receipts arising from the subject development grow from an estimated $6.38 million in the first year of development to a peak of $35.66 million. Over the 18-year study period, the receipts total $446.88 million and stabilize at circa $32 million per year.

We have not included any excise tax revenues associated with the direct, local "multiplier effect" expenditures on the Big Island, or those created in the secondary market by the suppliers to the maintenance operating or secondary worker expenditures.

Transient Accommodations Tax -- This state-collected tax is set at 7.25 percent of the income attributable to the rental of transient lodging units. The state keeps 55.2 percent of the total, with the remainder spread among the various counties. The Big Island share (at present) is set at 18.6 percent of total statewide collections.

For hotel operations, the tax is applied to gross room revenues, and is therefore a function of the Average Daily Rate ($250 to $325 per night) and occupancy (82.0 percent) projected for each of the three proposed Kona Kai Ola hotels. At stabilization, the gross room revenues for the 200 rooms in the subject community will be $24.69 million annually.

Timeshare units are also charged TAT even though there are no daily rental amounts collected. The tax rate is applied against an assumed "fair market rental rate" for the unit. We have used a conservative projected rental rate of $250 nightly for the units, in conjunction with an expected occupancy rate of 94 percent. The stabilized effective gross taxable rental value of the 1,800 units following complete absorption and full use is $154.39 million per year.

The total TAT collected by the state is forecast to range from a low of $1.7 million in year 4 of the model (the first year of occupancy) to a high, stabilized level in year 18 and beyond $12.98 million annually. The total taxes paid over the 18-year model period is estimated at $122.0 million.

Total Public Benefits (Revenues) -- In constant, rounded 2006 dollars, the aggregate annual tax revenues flowing from the subject development at full project build-out range from:

- $1.21 to $22.18 million per year for the county of Hawaii, stabilizing over time at $22,175,784 per year, totaling $256.26 million over the 18-year development projection model;
- $8.39 to $53.0 million annually for the State of Hawaii, stabilizing at $47.94 million per year, and cumulatively at $660.93 million over the 18-year forecast period; and
- $9.6 to $73.08 million per year for total tax receipts (county and state), totaling $917.2 million for the initial 18 years of the Kona Kai Ola community, and stabilizing at $70.11 million per year.

Correlation

Our public cost/benefit assessment model is displayed on Table VII-1, depicting the correlation of public service costs (per capita allocation basis) with the anticipated tax revenue benefits.

Table VII-2 summarizes our costs/benefits findings on both an actual cost and per capita allowance basis for the Kona Kai Ola project.

As can be seen, regardless of the cost methodology adopted, in no single year do public coffers suffer a net loss resulting from subject development.

TABLE VII-1

PUBLIC COSTS/BENEFITS SUMMARY TABLE
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
In Constant Year 2006 Dollars

Development Year	1	2	3	4	5	6	7	8	9	10
PUBLIC BENEFITS (Revenues)										
1. REAL PROPERTY TAXES										
Cumulative Assessed Values (1) (2)										
Improvements			$92,311,650	$256,891,000	$552,701,300	$722,368,600	$1,025,168,050	$1,205,427,200	$1,315,977,900	$1,337,526,200
Land	$134,250,000	$134,250,000	$134,250,000	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560
Total Assessed Value	$134,250,000	$134,250,000	$226,561,650	$661,973,560	$957,783,860	$1,127,451,160	$1,430,250,610	$1,610,509,760	$1,721,060,460	$1,742,608,760
TOTAL REAL PROPERTY TAXES	**$1,208,250**	**$1,208,250**	**$2,039,055**	**$5,957,762**	**$8,620,055**	**$10,147,060**	**$12,872,255**	**$14,494,588**	**$15,489,544**	**$15,683,479**
2. STATE INCOME TAXES										
Taxable Personal Income (from wages)	$28,301,376	$51,204,836	$68,449,862	$116,360,743	$95,499,494	$155,387,377	$132,827,440	$129,122,763	$115,937,341	$146,721,303
Taxable Corporate Profits	$18,427,484	$31,560,919	$38,071,991	$53,990,156	$41,700,493	$67,801,776	$55,722,812	$52,501,161	$43,817,788	$61,802,221
Personal Taxes Paid	$1,641,480	$2,969,880	$3,970,092	$6,748,923	$5,538,971	$9,012,468	$7,703,992	$7,489,120	$6,724,366	$8,509,836
Corporate Taxes Paid	$368,550	$631,218	$761,440	$1,079,803	$834,010	$1,356,036	$1,114,456	$1,050,023	$876,356	$1,236,044
TOTAL STATE INCOME TAXES	**$2,010,029**	**$3,601,099**	**$4,731,532**	**$7,828,726**	**$6,372,981**	**$10,368,503**	**$8,818,448**	**$8,539,143**	**$7,600,722**	**$9,745,880**
3. STATE GROSS EXCISE TAX										
Taxable Transactions										
Construction Contracts	$141,749,880	$235,560,130	$277,005,290	$300,871,000	$174,728,000	$302,799,450	$180,259,150	$110,550,700	$21,548,300	$112,320,100
Worker Disposable Income Purchases	$11,320,550	$20,481,934	$27,379,945	$46,544,297	$38,199,798	$62,154,951	$53,130,976	$51,649,105	$46,374,936	$58,688,521
Transient Guest Expenditures (on/off site)				$35,613,050	$49,122,613	$97,395,688	$112,191,875	$150,378,175	$166,460,988	$182,543,800
Non-Guest On-Site Operations				$103,836,385	$154,078,894	$195,878,558	$240,841,799	$274,828,065	$301,936,592	$347,787,843
Total Taxable Transactions	$153,070,430	$256,042,064	$304,385,235	$486,864,732	$416,129,304	$658,228,646	$586,423,800	$587,406,046	$536,320,816	$701,340,264
TOTAL STATE EXCISE TAX	**$6,376,914**	**$10,666,712**	**$12,680,689**	**$20,282,785**	**$17,335,947**	**$27,421,805**	**$24,430,416**	**$24,471,336**	**$22,343,125**	**$29,217,835**
4. STATE/COUNTY TRANSIENT ACCOMMODATIONS TAX										
Hotel Room Rentals				$14,965,000	$14,965,000	$39,657,250	$39,657,250	$59,111,750	$59,111,750	$59,111,750
Timeshare Taxable Allowance				$8,577,500	$17,583,875	$27,019,125	$36,883,250	$47,176,250	$57,898,125	$68,620,000
Total Taxable Amount				$23,542,500	$32,548,875	$66,676,375	$76,540,500	$106,288,000	$117,009,875	$127,731,750
TAT Taxation Rate				7.25%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
Total TAT Tax Collected				**$1,706,831**	**$2,359,793**	**$4,834,037**	**$5,549,186**	**$7,705,880**	**$8,483,216**	**$9,260,552**
TOTAL GROSS PUBLIC REVENUES										
To Hawaii County (Item #1 & 18.6% of #4)	$1,208,250	$1,208,250	$2,039,055	$6,275,233	$9,058,976	$11,046,191	$13,904,404	$15,927,882	$17,067,422	$17,405,941
To State (Items #2, 3 & 55.2% of #4)	$8,386,944	$14,267,811	$17,412,221	$29,053,682	$25,011,533	$40,458,697	$36,312,014	$37,264,125	$34,626,582	$44,075,540
AGGREGATE TAX REVENUES	**$9,595,194**	**$15,476,061**	**$19,451,276**	**$35,328,914**	**$34,070,510**	**$51,504,889**	**$50,216,418**	**$53,192,007**	**$51,694,004**	**$61,481,482**
PUBLIC COSTS (Expenses)										
By Hawaii County				$788,744	$1,144,804	$2,192,278	$2,582,249	$3,438,813	$3,862,695	$4,286,576
By State of Hawaii				$3,750,223	$5,443,174	$10,423,574	$12,277,760	$16,350,449	$18,365,868	$20,381,287
TOTAL PUBLIC COSTS				**$4,538,966**	**$6,587,978**	**$12,615,852**	**$14,860,008**	**$19,789,262**	**$22,228,562**	**$24,667,862**
TOTAL NET PUBLIC BENEFITS										
To Hawaii County	$1,208,250	$1,208,250	$2,039,055	$5,486,489	$7,914,172	$8,853,914	$11,322,156	$12,489,068	$13,204,728	$13,119,366
To State of Hawaii	$8,386,944	$14,267,811	$17,412,221	$25,303,459	$19,568,359	$30,035,123	$24,034,255	$20,913,676	$16,260,714	$23,694,253
AGGREGATE NET BENEFITS	**$9,595,194**	**$15,476,061**	**$19,451,276**	**$30,789,948**	**$27,482,531**	**$38,889,037**	**$35,356,410**	**$33,402,744**	**$29,465,442**	**$36,813,619**

(1) Assessed value for improvements are based on estimated construction cost of improvements. Includes Yacht & Fishing Clubs, Administration Support, Marine Science Center, Cultural Center and Community Center.

(2) Assumes SLU - Urban approvals achieved in Year 1, resulting in a land value at $250,000 per acre. Finished sites range from $700,000 to $2.5 million per acre with all completed (taxable) effective Year 4.
Marina basin considered as untaxable area. Effective tax rate for resort, commercial and industrial land & improvements is $9.00 per $1,000 of assessed value.

Source: The Hallstrom Group, Inc.

TABLE VII-1
Contd.

PUBLIC COSTS/BENEFITS SUMMARY TABLE
Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
In Constant Year 2006 Dollars

Development Year	11	12	13	14	15	16	17	18	Total Years 1 Through 18	Stabilized
PUBLIC BENEFITS (Revenues)										
1. REAL PROPERTY TAXES										
Cumulative Assessed Values (1) (2)										
Improvements -- Industrial	$1,449,846,300	$1,449,846,300	$1,563,652,700	$1,563,652,700	$1,678,240,900	$1,678,240,900	$1,790,561,000	$1,790,561,000		$1,790,561,000
Land -- Industrial	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560	$405,082,560		$405,082,560
Total Assessed Value	$1,854,928,860	$1,854,928,860	$1,968,735,260	$1,968,735,260	$2,083,323,460	$2,083,323,460	$2,195,643,560	$2,195,643,560		$2,195,643,560
TOTAL REAL PROPERTY TAXES	**$16,694,360**	**$16,694,360**	**$17,718,617**	**$17,718,617**	**$18,749,911**	**$18,749,911**	**$19,760,792**	**$19,760,792**	**$233,567,659**	**$19,760,792**
2. STATE INCOME TAXES										
Taxable Personal Income	$127,018,117	$164,240,711	$138,710,646	$170,740,339	$144,991,746	$176,387,460	$151,272,846	$151,272,846	$2,264,447,245	$151,272,846
Taxable Corporate Profits	$49,802,691	$69,251,397	$54,282,343	$72,024,160	$57,730,415	$0	$0	$0	$768,487,808	$0
Personal Taxes Paid	$7,367,051	$9,525,961	$8,045,217	$9,902,940	$8,409,521	$10,230,473	$8,773,825	$8,773,825	$131,337,940	$8,773,825
Corporate Taxes Paid	$996,054	$1,385,028	$1,085,647	$1,440,483	$1,154,608	$0	$0	$0	$15,369,756	$0
TOTAL STATE INCOME TAXES	**$8,363,105**	**$10,910,989**	**$9,130,864**	**$11,343,423**	**$9,564,130**	**$10,230,473**	**$8,773,825**	**$8,773,825**	**$146,707,696**	**$8,773,825**
3. STATE GROSS EXCISE TAX										
Taxable Transactions										
Construction Contracts	$0	$113,806,400	$0	$114,588,200	$0	$112,320,100	$0	$0	$2,198,106,699	
Worker Disposable Income Purchases	$50,807,247	$65,696,284	$55,484,258	$68,296,136	$57,996,698	$70,554,984	$60,509,138	$60,509,138	$905,778,898	$60,509,138
Transient Guest Expenditures (on/off site)	$198,626,613	$214,709,425	$230,792,238	$246,875,050	$262,957,863	$279,040,675	$333,722,238	$311,206,300	$2,871,636,588	$311,206,300
Non-Guest On-Site Operations	$374,250,367	$398,094,481	$390,038,991	$391,178,836	$392,932,860	$394,073,485	$395,214,110	$396,354,735	$4,751,326,001	$396,354,735
Total Taxable Transactions	$623,684,227	$792,306,590	$676,315,487	$820,938,222	$713,887,421	$855,989,244	$789,445,486	$768,070,173	$10,726,848,185	$768,070,173
TOTAL STATE EXCISE TAX	**$25,982,685**	**$33,007,493**	**$28,175,303**	**$34,200,286**	**$29,740,550**	**$35,660,512**	**$32,888,299**	**$31,997,803**	**$446,880,495**	**$31,997,803**
4. STATE/COUNTY TRANSIENT ACCOMMODATIONS TAX										
Hotel Room Rentals	$24,692,250	$24,692,250	$24,692,250	$24,692,250	$24,692,250	$24,692,250	$24,692,250	$24,692,250	$484,117,750	$24,692,250
Timeshare Taxable Allowance	$79,341,875	$90,063,750	$100,785,625	$111,507,500	$122,229,375	$132,951,250	$143,673,125	$154,395,000	$1,198,705,625	$154,395,000
Total Taxable Amount	$104,034,125	$114,756,000	$125,477,875	$136,199,750	$146,921,625	$157,643,500	$168,365,375	$179,087,250	$1,682,823,375	$179,087,250
TAT Taxation Rate	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
Total TAT Tax Collected	**$7,542,474**	**$8,319,810**	**$9,097,146**	**$9,874,482**	**$10,651,818**	**$11,429,154**	**$12,206,490**	**$12,983,826**	**$122,004,695**	**$12,983,826**
TOTAL GROSS PUBLIC REVENUES										
To Hawaii County (Item #1 & 18.6% of #4)	$18,097,260	$18,241,844	$19,410,686	$19,555,271	$20,731,149	$20,875,734	$22,031,199	$22,175,784	$256,260,532	$22,175,784
To State (Items #2, 3 & 55.2% of #4)	$38,509,235	$48,511,017	$42,327,792	$50,994,423	$45,184,483	$52,199,877	$48,400,106	$47,938,700	$660,934,783	$47,938,700
AGGREGATE TAX REVENUES	**$56,606,495**	**$66,752,861**	**$61,738,479**	**$70,549,694**	**$65,915,632**	**$73,075,611**	**$70,431,305**	**$70,114,484**	**$917,195,315**	**$70,114,484**
PUBLIC COSTS (Expenses)										
By Hawaii County	$4,710,457	$5,134,338	$5,558,220	$5,982,101	$6,405,982	$6,829,863	$8,271,060	$7,677,626	$68,865,804	$7,677,626
By State of Hawaii	$22,396,705	$24,412,124	$26,427,543	$28,442,962	$30,458,380	$32,473,799	$39,326,223	$36,504,637	$327,434,707	$36,504,637
TOTAL PUBLIC COSTS	**$27,107,162**	**$29,546,462**	**$31,985,762**	**$34,425,062**	**$36,864,362**	**$39,303,662**	**$47,597,282**	**$44,182,262**	**$396,300,511**	**$44,182,262**
TOTAL NET PUBLIC BENEFITS										
To Hawaii County	$13,386,803	$13,107,506	$13,852,467	$13,573,170	$14,325,167	$14,045,870	$13,760,140	$14,498,158	$187,394,728	$14,498,158
To State of Hawaii	$16,112,530	$24,098,893	$15,900,249	$22,551,462	$14,726,103	$19,726,078	$9,073,883	$11,434,064	$333,500,076	$11,434,064
AGGREGATE NET BENEFITS	**$29,499,333**	**$37,206,399**	**$29,752,716**	**$36,124,632**	**$29,051,270**	**$33,771,949**	**$22,834,023**	**$25,932,221**	**$520,894,804**	**$25,932,221**

TABLE VII-2

SUMMARY OF ANNUAL PRIMARY GOVERNMENTAL TAX RECEIPTS AND PUBLIC SERVICE COSTS

Market Study of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
In Constant Year 2006 Dollars

	State of Hawaii					
	Actual Cost Comparison			Per Capita Allocation Comparison		
On Stabilized Basis At Build-Out	**Receipts**	**- Costs**	**= Net Benefits or (Costs)**	**Receipts**	**- Costs**	**= Net Benefits or (Costs)**
Amount per Year	$47,938,700	($500,000)	$47,438,700	$47,938,700	($36,504,637)	$11,434,063

	County of Hawaii					
	Actual Cost Comparison			Per Capita Allocation Comparison		
On Stabilized Basis At Build-Out	**Receipts**	**- Costs**	**= Net Benefits or (Costs)**	**Receipts**	**- Costs**	**= Net Benefits or (Costs)**
Amount per Year	$22,175,784	($1,469,800)	$20,705,984	$22,175,784	($1,058,183)	$21,117,601

Source: The Hallstrom Group, Inc.

THE HALLSTROM GROUP INC.

REAL ESTATE
CONSULTANTS
& APPRAISERS

PROFESSIONAL BACKGROUND AND SERVICES

The Hallstrom Group, Inc. is a Honolulu based independent professional organization that provides a wide scope of real estate consulting services throughout the State of Hawaii with particular emphasis on valuation studies. The purpose of the firm is to assist clients in formulating realistic real estate decisions. It provides solutions to complex issues by delivering thoroughly researched, objective analyses in a timely manner. Focusing on specific client problems and needs, and employing a broad range of tools including after-tax cash flow simulations and feasibility analyses, the firm minimizes the financial risks inherent in the real estate decision making process.

The principals and associates of the firm have been professionally trained, are experienced in Hawaiian real estate, and are actively associated with the Appraisal Institute and the Counselors of Real Estate, nationally recognized real estate appraisal and counseling organizations.

The real estate appraisals prepared by The Hallstrom Group accomplish a variety of needs and function to provide professional value opinions for such purposes as mortgage loans, investment decisions, lease negotiations and arbitrations, condemnations, assessment appeals, and the formation of policy decisions. Valuation assignments cover a spectrum of property types including existing and proposed resort and residential developments, industrial properties, high-rise office buildings and condominiums, shopping centers, subdivisions, apartments, residential leased fee conversions, special purpose properties, and vacant acreage, as well as property assemblages and portfolio reviews.

Market studies are research-intensive, analytical tools oriented to provide insight into investment opportunities and development challenges, and range in focus from highest and best use determinations for a specific site or improved property, to an evaluation of multiple (present and future) demand and supply characteristics for long-term, mixed-use projects. Market studies are commissioned for a variety of purposes where timely market information, insightful trends analyses, and perceptive conceptual conclusions or recommendations are critical. Uses include the formation of development strategies, bases for capital commitment decisions, evidence of appropriateness for state and county land use classification petitions, fiscal and social impact evaluations, and the identification of alternative economic use/conversion opportunities.

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PROFESSIONAL QUALIFICATIONS OF JAMES E. HALLSTROM, JR., MAI, CRE

Business Background

President	The Hallstrom Group, Inc. Honolulu, Hawaii (1980 - Present)
Former Senior Vice President and Treasurer	Hastings, Martin, Hallstrom and Chew, Ltd., Honolulu, Hawaii (1972-1980)
Former Real Property Appraiser and Analyst	Administration, Inc., a subsidiary of C. Brewer and Company, Limited Honolulu, Hawaii (1971-1972)
Former Senior Real Property Appraiser and Analyst	Opitz Realty, Madison, Wisconsin (1969-1971)

National Designations and Memberships

- CRE Designation (1998) - The Counselors of Real Estate
- MAI Designation (1976) - American Institute of Real Estate Appraisers
- SRPA Designation (1975) - Society of Real Estate Appraisers

The American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated in 1991, forming the Appraisal Institute (AI).

Education

- M.S. (Real Estate Appraisal and Investment Analysis) 1971, University of Wisconsin at Madison
- B.A. (Economics) 1969, Brigham Young University at Provo
- Additional numerous specialized real estate studies in connection with qualifying for national professional designations, and uninterrupted Continuing Education.
- Completed Continuing Education requirements with the Appraisal Institute through 2006.

Professional Involvement

- Former President and Officer for Hawaii AIREA and SREA Chapters
- Instructor for Society of Real Estate Appraisers Course 101, "Introduction to Appraising Real Property" and Course 201, "Principles of Income Property Appraising"
- Contributing author to the "Hawaii Real Estate Investor"
- Lecturer at many professional seminars and clinics.
- Appointed numerous times as an Arbitrator and Mediator.

Qualified Expert Witness

Federal and State Courts
State Land Use and County Hearings
Arbitration Proceedings

State of Hawaii Certification

Certified General Appraiser, License Number CGA-178, Exp. Date December 31, 2007

Community Service

Active registered member of the Boy Scouts of America; former Director of Le Jardin Academy; former Advisory Board Member of the School of Business, Brigham Young University, Hawaii Campus; Director of Hawaii Reserves, Inc.

PROFESSIONAL QUALIFICATIONS OF THOMAS W. HOLLIDAY

Business Background

Senior Analyst	The Hallstrom Group, Inc. Honolulu, Hawaii Since 1980
Former Staff Appraiser	Davis-Baker Appraisal Co. Avalon, Santa Catalina Island, California

Education

- B.A. (Communications/Journalism) 1978 California State University at Fullerton
- SREA Course 201- Principles of Income Property Appraising
- Expert witness testimony before State of Hawaii Land Use Commission and various state and county boards and agencies since 1983.
- Numerous professional seminars and clinics
- Contributing author to Hawaii Real Estate Investor, Honolulu Star Bulletin

On January 1, 1991, the American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated, forming the Appraisal Institute (AI).

Recent Kauai and Neighbor Island Assignments

- Market Study, Economic Impact Analyses and Public Costs/Benefits Assessments
  - -- Village at Poipu (Resort/Residential)
  - -- Ocean Bay Plantation (Resort/Residential)
  - -- Waipono/Puhi (Mixed-Use Planned Development)
  - -- Eleele Commercial Expansion (Commercial)
  - -- Kona Kai Ola (Mixed-Use Resort Community)
  - -- Waikoloa Highlands (Residential)
  - -- Waikoloa Heights (Mixed-Use Residential Development)
  - -- Upcountry Town Center (Mixed-Use Planned Development)
  - -- Maui Lani (Residential and Industrial Components of Master Planned Community)
  - -- Maui Business Park, Phase II (Industrial/Commercial)
  - -- Four Seasons Private Estates and Residences Club (Resort/Residential)
  - -- Kualono Subdivision (Residential)
  - -- Kapalua Mauka (Master Planned Community)
  - -- Hailiimaile (Mixed-Use Master Planned Community)
  - -- Pulelehua (Master Planned Community)
  - -- Westin Kaanapali Ocean Villas Expansion (Resort/Timeshare)

- Major Valuation Assignments
  - -- Coco Palms Resort
  - -- Grand Hyatt Kauai
  - -- Islander on the Beach
  - -- Waimea Plantation Cottages
  - -- Coconut Beach Resort
  - -- Keauhou Beach Hotel
  - -- Sheraton Maui Hotel
  - -- Outrigger Wailea Resort Hotel
  - -- Maui Lu Hotel
  - -- Coconut Grove Condominiums
  - -- Palauea Bay Holdings
  - -- Wailea Ranch
  - -- Maui Coast Hotel
  - -- Westin Maui Hotel
  - -- Maui Marriott Hotel
  - -- Waihee Beach
  - -- Kapalua Bay Hotel and The Shops at Kapalua

Appendix C-2

Workforce Housing Impacts Assessment of the Proposed Kona Kai Ola Community

By The Hallstrom Group, Inc.

Workforce Housing Assessment
of the Proposed
KONA KAI OLA COMMUNITY
Kealakehe, North Kona, Hawaii

THE HALLSTROM GROUP INC.
REAL ESTATE
CONSULTANTS
& APPRAISERS

June 20, 2007

Mr. Scott W. Condra
Senior Vice President
Jacoby Development, Inc.
171 17th Street NW, Suite 1550
Atlanta, Georgia 30363

Workforce Housing Impacts Assessment of
the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Dear Mr. Condra:

At your request, we have completed a defined-scope study assessing the "workforce housing" impacts associated with the proposed Kona Kai Ola community, an oceanfront mixed-use destination planned for approximately 490 acres located makai of Queen Kaahumanu Highway, southerly adjacent to the Honokohau Small Boat Harbor.

In order to estimate the net workforce impacts which will be created via actualization of the subject master plan, we have undertaken a four-step study process:

1. ***Quantification of Population and Employment Projections.*** Historic County of Hawaii population, in-migration, job count and job type data was researched, current trends assessed, and forecasts made to the year 2030 (encompassing the subject development).

2. ***Analysis of West Hawaii Employment Demand and Supply.*** The historic and forecast demand for jobs in the effective market area for Kona Kai Ola was estimated and compared with the ability of the current and future land base to provide sufficient supply to service employment needs. This technique identifies whether there is an economic demand for the subject development from job creation perspective.

3. ***Detail of the Subject Workforce.*** Based on the County and regional projections, the characteristics of subject on-site permanent job creation are estimated over time relative to annual and cumulative counts, source of employees, and general wage parameters.

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4. ***Quantification of Subject Workforce Housing Impacts.*** To the extent the operating businesses in Kona Kai Ola "attract" in-migrating workers, an excess (beyond in-place resident) demand for housing is created in the region; a portion of which will be a need for affordable units. The model application couples the details of the subject workforce with housing pricing and affordability formulae.

The results of our investigation and analysis are summarized in the attached limited report, with the narrative focusing on introduction of the 12 tables which contain the data and modeling results, and our general and specific conclusions.

The purpose of our assignment has been to estimate the in-migrant workforce housing impacts associated with the proposed Kona Kai Ola master plan. The function of this summary report is to transmit our findings for use in Environmental Impact Statement submittals and internal decision-making purposes.

The effective date of study is May 15, 2007. In completing this report, we have researched U. S. Census, State of Hawaii, County of Hawaii, and other applicable, available databases; utilized materials and findings from our October 23, 2006 "Market Study, Economic Impact Analysis and Public Costs/Benefits Assessment of the Proposed Kona Kai Ola Community"; completed a survey of existing businesses and employees in regard to in-migration and housing issues; and, used other sources as cited in the text or tables. The primary method of analysis was construction of a demographic model based on forecast regional employment/worker statistics coupled with specific subject characteristics.

All conclusions expressed herein are subject to the standard limiting conditions, assumptions and certification of The Hallstrom Group, Inc. (attached), in addition to any others set forth in the narrative or tables. All work has been completed in conformance with the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice.

Based on our investigation and analysis, we have concluded as of the study date:

1. The population and job count on the Big Island are forecast to increase by circa 70 percent during the 24 year projection period (through 2030). Upwards of 60 percent of the population growth on average will be a result of net in-migration to the County. Although trends will be slowing relative to recent decades, a significant portion of the population and business expansion will be directed towards West Hawaii.

2. Over the coming two-plus decades, the population and job count in West Hawaii will increase by about 80 percent, reaching 128,200 residents and 87,400 employment positions by 2030. The available approved/entitled, proposed and announced new projects and their associated forecast job creation supply will not be sufficient to meet estimated employment demand over time. Further, with the approaching build-out of the major West Hawaii resorts and residential-orientation of the newer resort communities, few opportunities will exist for expansion in the historically-vital tourism economic sector.

3. Actualization of the Kona Kai Ola master plan will create a total of 3,842 on-site full time equivalent employment positions in the operating businesses of the development, which will begin to come on-line in circa 2012, following completion of infrastructure and Phase I construction, and continue until the community reaches build-out and stabilization in 2026. About 45 percent of the jobs will be entry level/low skill positions with an average annual wage of $20,000 in current dollars; 40 percent will be mid-level/moderate skill jobs with average yearly pay of $32,000; and, 15 percent will be management/high-skill positions with wages averaging $50,000.

4. Approximately 2,147 of the jobs in the subject project will be filled by persons who have in-migrated to the Big Island; although, only a nominal portion would be specifically relocated to West Hawaii as a result of the development. The total net housing load created by Kona Kai Ola in-migrant workers would be 1,074 units, of which some 80 percent, or 859 total units, would need to meet affordable pricing guidelines, with an estimated current sales price of $216,000 to $292,000. This demand would best be met via "moderate density apartment" type development, which equates to a need for circa 57 acres of net building sites.

5. Historically, affordable housing requirements have not been applied to non-hotel commercial and industrial development in the state; although in recent years a proposed major business park on Maui has been so assessed and it has emerged as a leading planning issue on the neighbor islands. This study is based on the general methodology used in the Maui case and so provides a comparable result. A common requirement for hotels has been one affordable workforce housing unit per four guest rooms. Application of the "1 to 4" ratio to all of the transient units proposed for Kona Kai Ola (hotel and timeshare) results in a workforce housing requirement of 625 units.

6. Based on availability, efficiencies and surveys conducted of area workers, the most probable and desirable locations for workforce housing in support of the subject project would be in the mid-elevation lands of the Keahole to Kailua-Kona Corridor, between the Queen Kaahumanu fronting commercial/industrial developments and Mamalahoa Highway; or, in the Waikoloa Village expansion areas. Specifically, given the underlying land owners of Kona Kai Ola are State of Hawaii agencies (DLNR and DHHL), that the housing units are not permitted by them to be located on the subject acreage, and as it will be difficult to provide units at the needed prices within an open market situation, the best location for the units would be within the Villages at Laipua complex, a State-owned undertaking directly across the Highway in the same ahupuaa. This would substantially lessen the traffic impacts associated with a community subject workforce. Alternatively, the State lands adjacent to Waikoloa Village would be appropriate.

We appreciate the opportunity to be of service in this matter. Please contact us if further detail or explanation is required.

Respectfully submitted,

THE HALLSTROM GROUP, INC.

James E. Hallstrom, Jr., MAI, CRE

/sjh/as

THE HALLSTROM GROUP INC.
REAL ESTATE CONSULTANTS & APPRAISERS

Workforce Housing Assessment

of the Proposed

KONA KAI OLA COMMUNITY

to be located at

Kealakehe, North Kona, Hawaii

Prepared for

Mr. Scott Condra
Senior Vice-President
Jacoby Development, Inc.

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June 2007

Quantification of Population and Employment Projections

The historic resident population and employment characteristics data for Hawaii County for the period 1970 to 2007 are shown on Table 1. Over the past 37 years:

- The resident population on the island has nearly tripled, reaching some 176,000 persons as of the study date, with an annual growth rate of 2.70 percent, compounded.
- The county job count and workforce size have had similar expansion trends, resulting in a total of 84,476 workers and 81,950 jobs by 2007.
- The ratio of the workforce to the total population has remained relatively static over the study period, while the effective unemployment rate has been cut by more than half to record lows of less than three percent in recent years.
- Agricultural and manufacturing jobs have declined meaningfully as a proportion of total jobs since 1970 (primarily due to the demise of the sugar industry), while the hotel/other services category has more than doubled in relevance, and the ratio of self-employed persons has increased by half.

Based on the current Hawaii County General Plan (Series C) and various State of Hawaii agencies publications, we have forecast the population and employment levels for the Big Island through 2030, as displayed on Table 2. During the 24-year projection period:

- The resident population in the County will increase by some 118,000 persons from current totals, which equates to a compounded annual growth rate of 2.16 percent.
- Again increasing at similar rates, the size of the in-place workforce and total job count will result in 152,000 total workers and 146,000 jobs by 2030.
- The effective unemployment rate will stabilize at circa four percent, which is about twice the current overheated level (and a much more healthy market condition), and the ratio of jobs to

TABLE 1

COMPARISON OF HAWAII COUNTY HISTORICAL POPULATION, EMPLOYMENT AND JOB TRENDS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Year	1970	1980	1990	2000	2007
Hawaii County Resident Population	63,468	92,053	120,317	148,677	176,000
Compounded Percent Annual Change		3.79%	2.71%	2.14%	2.44%
Hawaii County Job Count (1)	28,410	39,300	56,300	70,750	81,950
Compounded Percent Annual Change		3.02%	3.66%	2.31%	1.48%
Ratio of Jobs to Population	44.76%	42.69%	46.79%	47.59%	46.56%
Hawaii County Workforce	30,500	41,950	58,350	74,200	84,476
Compounded Percent Annual Change		3.07%	3.35%	2.43%	1.87%
Ratio of Workforce to Population	48.06%	45.57%	48.50%	49.91%	48.00%
Effective Gross Avg. Unemployment Rate	6.85%	6.32%	3.51%	4.65%	2.99%
Jobs by Industry (Percent of Total) (2)					
Agriculture	19.97%	14.66%	10.24%	7.14%	6.71%
Construction	5.72%	3.50%	6.16%	4.38%	6.52%
Manufacturing	10.24%	6.62%	3.75%	2.26%	1.93%
Transportation/Communications/Utilities	4.80%	4.61%	4.25%	3.96%	4.66%
Trade	17.51%	19.50%	21.73%	19.22%	13.60%
Finance/Insurance/Real Estate	3.05%	3.19%	4.00%	3.18%	3.42%
Hotel/Recreation/Other Services	12.88%	19.15%	24.65%	28.20%	34.03%
Public Administration	14.97%	15.84%	15.15%	15.69%	14.84%
Self-Employed (non-Ag.)	10.86%	12.53%	10.07%	15.90%	14.69%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

(1) Includes all civilian wage earning jobs and self-employed positions (estimated).
(2) Classification of jobs and availability of data has varied over time. 1980 data taken from 1984 series, 1990 from a 1991 series, and 2007 from a year-end 2006 series.

Source: State of Hawaii DBEDT, Hawaii County General Plan, and The Hallstrom Group, Inc.

resident population will inch nominally upward over time to nearly 50 percent.

- The construction industry will see steady gains during the projection period as will the trade and transportation/utilities sectors. Agriculture will continue to decline in proportion to the overall job market, as will tourism when the available resort areas reach effective build-out.

The historic sources of population growth, whether from "natural increase" (births less deaths in the resident population) or from "net migration" (persons moving in less those moving out) for the County from 1970 onward are summarized on Table 3.

Gains from migration have far outpaced natural increase (the expansion of in-place resident households), with in-migrants moving from 55 percent of the total increase during the 1970's to a level of 73 percent of the total population growth during the current decade. This proportion far exceeds that seen on the other major islands.

Table 4 shows the projected Big Island sources of population growth from 2007 through 2030 based on evident demographic trends.

After natural increase gains averaging just over 1,000 persons per year between 1980 and 2007, major gains are expected in this demographic component over the coming two-plus decades as a compounding additional number of resident women give birth and evolving medical care lengthens life (resulting in a lower ratio of annual deaths).

The rate of in-migration is forecast to stabilize at about 3,000 persons per years through 2030, up from the average level of 1,930 persons annually from 1970 to 2007, but consistent with recent trends (2001-07).

Overall, the ratio of population growth will move towards more natural gains as is seen on the other major islands statewide; however, we estimate that by the end of the projection period in-migrants will still make up the majority of the continuing population expansion, comprising 55 percent of total increases.

TABLE 2

PROJECTED HAWAII COUNTY POPULATION, EMPLOYMENT AND JOB TRENDS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Year	2010	2015	2020	2025	2030
Hawaii County Resident Population	188,031	211,357	237,323	265,000	294,000
Compounded Percent Annual Change		2.37%	2.34%	2.23%	2.10%
Hawaii County Job Count (1)	92,317	103,981	117,306	131,500	146,000
Compounded Percent Annual Change		2.41%	2.44%	2.31%	2.11%
Ratio of Jobs to Population	49.10%	49.20%	49.43%	49.62%	49.66%
Hawaii County Workforce	94,000	107,000	122,000	137,000	152,000
Compounded Percent Annual Change		2.62%	2.66%	2.35%	2.10%
Ratio of Workforce to Population	49.99%	50.63%	51.41%	51.70%	51.70%
Effective Gross Avg. Unemployment Rate	1.79%	2.82%	3.85%	4.01%	3.95%
Jobs by Industry (Percent of Total)					
Agriculture	6.00%	5.00%	4.75%	4.50%	4.00%
Construction	7.00%	8.00%	8.25%	8.50%	8.50%
Manufacturing	1.75%	1.50%	1.50%	1.50%	1.50%
Transportation/Communications/Utilities	5.00%	5.25%	5.50%	5.75%	6.00%
Trade	14.00%	14.25%	14.50%	14.75%	15.00%
Finance/Insurance/Real Estate	3.25%	3.25%	3.50%	3.50%	3.50%
Hotel/Recreation/Leisure Services	33.50%	33.00%	32.00%	32.00%	32.00%
Public Administration	14.75%	14.50%	14.50%	14.25%	14.00%
Self-Employed	14.75%	15.00%	15.25%	15.50%	15.75%
Total	100%	100%	100%	100%	100%

(1) Includes all civilian wage earning jobs and self-employed positions (estimated).

Source: Hawaii County general Plan "Series C", and The Hallstrom Group, Inc.

TABLE 4

PROJECTED HAWAII COUNTY POPULATION GROWTH AND IN-MIGRATION TRENDS
USING UNADJUSTED DEMOGRAPHIC TRENDING
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Period	2007 to 2010	2011 to 2015	2016 to 2020	2016 to 2020	2016 to 2020
Population Increase (Net Change)	12,031	23,326	25,966	27,677	29,000
Source of Population Growth					
Growth from Natural Increase	3,609	8,164	10,386	12,455	14,500
Percent of Total Increase	30.0%	35.0%	40.0%	45.0%	50.0%
Growth from Net Migration (1)	8,422	15,162	15,580	15,222	14,500
Percent of Total Increase	70.0%	65.0%	60.0%	55.0%	50.0%

(1) Includes net movement into or out of armed forces.

Source: State of Hawaii DBEDT and The Hallstrom Group, Inc.

TABLE 3

SUMMARY OF HAWAII COUNTY POPULATION GROWTH AND IN-MIGRATION TRENDS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Period	1971 to 1980	1981 to 1990	1991 to 2000	2001 to 2007
Population Increase (Net Change)	28,585	28,264	28,360	27,323
Source of Population Growth (1)				
Growth from Natural Increase	12,863	10,435	10,477	7,377
Percent of Total Increase	45.0%	43.5%	36.9%	27.0%
Growth from Net Migration (2)	15,722	17,829	17,883	19,946
Percent of Total Increase	55.0%	56.5%	63.1%	73.0%

(1) Factors for 1971-1980 extrapolated from statewide figures. 2001-2007 factors based on data for 2000-2005
(2) Includes net movement into or out of armed forces

Source: State of Hawaii DBED and The Hallstrom Group, Inc

Analysis of West Hawaii Employment Demand and Supply

Using similar data points, we have identified historic population and employment trends in the West Hawaii region (including the North and South Kohala and North and South Kona districts). The pertinent figures for 1970 to 2007 are summarized on Table 5. During the study period:

- The resident population of the region grew nearly five-fold, reaching a current level of 71,148 persons, with a compounded annual growth rate over the 37 years of 4.40 percent; nearly two-thirds greater than the growth rate of the overall County.
- West Hawaii changed from an agricultural backwater to the focus of Big Island economic expansion over the past four decades, with the number of jobs in the study area expanding about seven-fold, from 7,103 in 1970 to a current count of about 49,100, equivalent to a 5.36 percent escalation per year, compounded.
- The regional workforce did not expanded sufficiently to absorb the flood of jobs, increasing only at rate of 4.67 percent annually (similar to the population growth rate). As a result, the ratio of West Hawaii jobs to numbers of residents has increased substantially, and commuters from elsewhere on the island have filled a portion of area jobs; a factor enhanced by the relative slow rate of job growth and greater availability of affordable housing opportunities in East Hawaii.

Projected population and employment trends for West Hawaii for the period 2010 through 2030 are shown on Table 6. While continuing gains are expected for the study region, it is at a much subdued level relative to the explosion of the last four decades, and more closely akin to County-wide expectations. Of specific note:

- The resident population is projected to increase to 128,200 persons by 2030, a gain of 57,052 persons from current level and a annualized growth rate of 2.48 percent. The available regional workforce will expand at a similar rate.
- The number of new jobs created in West Hawaii over the next 24 years is estimated at 38,300 reaching a total of 87,400 full time equivalent positions.

TABLE 5

COMPARISON OF WEST HAWAII HISTORICAL POPULATION, EMPLOYMENT AND JOB TRENDS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Year	1970	1980	1990	2000	2007
West Hawaii Resident Population (1)	14,472	27,518	43,373	56,301	71,148
Compounded Percent Annual Change		6.64%	4.66%	2.64%	3.40%
Percent of Total County Population	22.80%	29.89%	36.05%	37.87%	40.43%
Estimated West Hawaii Job Count (2)	7,103	14,738	25,335	38,913	49,100
Compounded Percent Annual Change		7.57%	5.57%	4.38%	4.76%
Percent of Total County Jobs	25.00%	37.50%	45.00%	55.00%	60.00%
Ratio of West Hawaii Jobs to Population	49.08%	53.56%	58.41%	69.12%	69.01%
Estimated West Hawaii Workforce	7,300	13,750	23,000	30,500	39,500
Compounded Percent Annual Change		6.54%	5.28%	2.86%	3.76%
Percent of Total County Workforce	23.93%	32.78%	39.42%	41.11%	46.76%
Ratio of West Hawaii Workforce to Population	50.44%	49.97%	53.03%	54.17%	55.52%

(1) Includes the district of North and South Kohala, and North and South Kona.
(2) Includes all civilian wage earning jobs and self-employed positions (estimated).

Source: State of Hawaii DBEDT, Hawaii County General Plan, and The Hallstrom Group, Inc.

- The ratio of West Hawaii jobs to the population and workforce to the population are expected to remain generally stable during the forecast period.

Given the population and economic models quantify a "demand" for 38,300 new jobs to be created in West Hawaii between 2007 and 2030, the issue is whether there is a sufficient "supply" of available entitled, approved, proposed and/or announced lands to house the businesses providing them.

Table 7 breaks down the estimated new job creation in the major employment areas in West Hawaii over the coming 24 years. The number of jobs created by location and year are based on an analysis of existing, available and proposed development studies (many of which were completed by our firm) and a review of entitled parcels and their probable density and timing of use.

The major employment gains will be in the Keahole to Kailua-Kona Corridor (K to K), which encompasses the Kona Kai Ola site; with the coastal resorts, central Kailua-Kona, Waikoloa Village expansion and the in-home/self-employed sectors also providing a substantial "supply" of new jobs.

However, despite potentially creating up to 30,530 new jobs under a maximum build-out perspective, the available land base in the region is not sufficient to meet the demand for 38,300 new positions; falling short by some 7,700 opportunities (and over 20 percent) from the need expressed by the population and economic models. The shortfall is likely to be worse given the aggressive/optimistic nature of the locational forecasts and the extended time projected for some of the larger developments.

Further, the proposed job supply contains very few new positions in the hotel/transient accommodations sector, a vital and sustaining part of the West Hawaii economy. The large portion of new jobs created in the coastal developments will be in commercial projects serving the community, recreational-based, support services and vacation home maintenance. As discussed in our previously referenced market study, there are only two or three hotel development sites left in the region. Without the subject "hotel" jobs, the sector will become stagnant during the projection period.

TABLE 6

PROJECTED WEST HAWAII POPULATION, EMPLOYMENT AND JOB TRENDS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Year	2010	2015	2020	2025	2030
West Hawaii Resident Population	77,511	88,500	100,357	114,000	128,200
Compounded Percent Annual Change		2.69%	2.55%	2.58%	2.38%
Percent of Total County Population	41.22%	41.87%	42.29%	43.02%	43.61%
West Hawaii Job Count (1)	53,566	61,200	69,450	78,500	87,400
Compounded Percent Annual Change		2.61%	2.42%	2.16%	2.11%
Percent of Total County Jobs	58.02%	58.86%	59.20%	59.70%	59.86%
Ratio of West Hawaii Jobs to Population	69.11%	69.15%	69.20%	68.86%	68.17%
West Hawaii Workforce	43,000	49,150	55,850	63,525	71,592
Compounded Percent Annual Change		2.71%	2.59%	2.61%	2.42%
Percent of Total County Workforce	45.74%	45.93%	45.78%	46.37%	47.10%
Ratio of West Hawaii Workforce to Population	55.48%	55.54%	55.65%	55.72%	55.84%

(1) Includes all civilian wage earning jobs and self-employed positions (estimated).

Source: Hawaii County general Plan "Series C", and The Hallstrom Group, Inc.

The regional supply/demand calculations demonstrate there is sufficient room, if not "need", for the 3,842 permanent on-site positions of Kona Kai Ola in the West Hawaii economy. And, specifically for the 2,170 hotel/timeshare jobs of the subject.

Details of the Subject Workforce

Table 8 displays the permanent on-site job count for the subject workforce by general job type and employee source. The model reflects the build-out timeline of our earlier Economic Impact Analysis (October 2006) of the project.

Of the 3,842 jobs to be created over a 15 year period from circa 2012 through 2026, the largest segment will be in retail businesses (1,430 jobs), followed by timeshare personnel (1,260) and hotel workers (910). The majority of jobs will come on-line between 2012 and 2017.

Using the county-wide ratios regarding natural increase versus in-migration levels, the probable source of the employees were determined. The ratios were adjusted slightly to account for the large numbers of retirees being attracted to the region (non-job seeking) and a meaningful number of non-working wealthy in the permanent populations of the coastal resorts. Over time, we estimate the number of jobs filled by in-place residents ("natural increase") will gain as a portion of the whole.

The number of permanent, on-site Kona Kai Ola jobs filled by in-place residents is estimated at 1,695 positions, or 44.1 percent of the total, while in-migrant workers will fill 2,147 of the openings (or 55.9 percent).

On Table 9, the projected subject job count is shown relative to the total West Hawaii job demand figures, and is divided into skill/pay groups and number of forecast in-migrant workers filling the created positions over time. Of specific note:

- Approximately 45 percent, or 1,729 jobs, of the total on-site permanent workers at Kona Kai Ola will be entry level/low skill positions; of which 966 will be filled by in-migrants.
- Some 40 percent, or 1,537 jobs, will be mid-level/moderate skill opportunities; of which 859 will be in-migrating workers.

TABLE 7

PROJECTED ESTIMATE OF NEW JOB CREATION IN PRIMARY WEST HAWAII EMPLOYMENT CENTERS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
Maximum Build-Out Perspective Based on Available Zoned Lands and ApprovedProposedAnnounced Projects (Excluding the Subject)

Location	2007 to 2010	2011 to 2015	2016 to 2020	2021 to 2025	2026 to 2030
Central Kailua- Kona	160	225	225	225	225
Keahole to Kailua-Kona Corridor	2,400	3,125	3,250	3,375	3,500
N. Kona and S. Kohala Coastal Resorts	500	625	625	625	625
Waikoloa Village Expansion	100	400	400	200	200
Waimea Expansion	140	200	125	125	200
Kawaihae Expansion	60	75	75	75	75
Hawi Expansion	40	50	50	50	50
Kainaliu-Captain Cook Corridor	200	275	300	325	350
Regional Agricultural Expansion	80	100	100	100	100
Regional In-Home/Self-Employed	700	1,000	1,250	1,500	1,750
Total Estimated Periodic New Job Supply	4,380	6,075	6,400	6,600	7,075
Total Projected Regional New Job Demand	4,466	7,634	8,250	9,050	8,900
Ratio of Job Supply to Job Demand	98.07%	79.58%	77.58%	72.93%	79.49%
Net Job Undersupply or (Oversupply)	86	1,559	1,850	2,450	1,825

Cumulative Job Demand	38,300
Cumulative Job Supply	30,530
Net Job Undersupply or (Oversupply)	7,770
Job Supply/Demand Ratio	79.71%

Source: The Hallstrom Group, Inc.

TABLE 8

PERMANENT ON-SITE JOB COUNT BY JOB TYPE AND EMPLOYEE SOURCE
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Keaiakehe, North Kona, Hawaii

Development Year	Infrastructure and Phase I Construction 1	2	3	Phase I Opens 4	5	6	7	8	9	10	11	12	13	14	15	Build-Out Completed 16	Last Project Opens 17	Sell-Out & Community Stabilized 18
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Permanent Worker Requirements																		
Hotel Employees																		
Annual Additions				260	0	390	0	260	0	0	0	0	0	0	0	0	0	0
Cumulative Staff Positions				260	260	650	650	910	910	910	910	910	910	910	910	910	910	910
Timeshare Employees																		
Annual Additions				158	157	0	158	0	157	0	158	0	157	0	158	0	157	0
Cumulative Staff Positions				158	315	315	473	473	630	630	788	788	945	945	1,103	1,103	1,260	1,260
Retail Tenant Employees																		
Annual Additions				214	215	143	143	143	143	143	143	143	0	0	0	0	0	0
Cumulative Staff Positions				214	429	572	715	858	1,001	1,144	1,287	1,430	1,430	1,430	1,430	1,430	1,430	1,430
Marina Employees																		
Annual Additions				10	0	62	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Staff Positions				10	10	72	72	72	72	72	72	72	72	72	72	72	72	72
Maint. & Common Element Staff																		
Annual Additions				170	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Staff Positions				170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TOTAL EMPLOYMENT CREATED																		
Annual Additions				812	372	595	301	403	300	143	301	143	157	0	158	0	157	0
Cumulative Staff Positions				812	1,184	1,779	2,080	2,483	2,783	2,926	3,227	3,370	3,527	3,527	3,685	3,685	3,842	3,842
SOURCE OF EMPLOYEES																		
Hawaii County Residents																		
Percent of Total				41.50%	41.50%	41.50%	41.50%	46.00%	46.00%	46.00%	46.00%	46.00%	50.50%	50.50%	50.50%	50.50%	50.50%	55.00%
Annual Additions				337	154	247	125	185	138	66	138	66	79	0	80	0	79	0
Cumulative Staff Positions				337	491	738	863	1,049	1,187	1,252	1,391	1,457	1,536	1,536	1,616	1,616	1,695	1,695
In-Migrating Workers																		
Percent of Total				58.50%	58.50%	58.50%	58.50%	54.00%	54.00%	54.00%	54.00%	54.00%	49.50%	49.50%	49.50%	49.50%	49.50%	45.00%
Annual Additions				475	218	348	176	218	162	77	163	77	78	0	78	0	78	0
Cumulative Staff Positions				475	693	1,041	1,217	1,434	1,596	1,674	1,836	1,913	1,991	1,991	2,069	2,069	2,147	2,147

Source: The Hallstrom Group, Inc. "Economic Impact Analysis of the Proposed Kona Kai Ola Community", dated October 23, 20(

TABLE 9

PERMANENT ON-SITE JOB COUNT RELATIVE TO REGIONAL LEVELS AND JOB STATUS
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Development Year	Infrastructure and Phase I Construction 1	2	3	Phase I Opens 4	5	6	7	8	9	10	11	12	13	14	15	Build-Out Completed 16	Last Project Opens 17	Sell-Out & Community Stabilized 18
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Estimated New West Hawaii																		
Employment Positions																		
Annual Additions	1,489	1,489	1,527	1,527	1,527	1,527	1,527	1,650	1,650	1,650	1,650	1,650	1,810	1,810	1,810	1,810	1,810	1,780
Cumulative Positions	1,489	2,978	4,505	6,032	7,559	9,086	10,613	12,263	13,913	15,563	17,213	18,863	20,673	22,483	24,293	26,103	27,913	29,693
Projected Kona Kai Ola																		
Permanent Employment Positions																		
Annual Additions				812	372	595	301	403	300	143	301	143	157	0	158	0	157	0
Percent of Regional Totals				53.18%	24.36%	38.97%	19.71%	24.42%	18.18%	8.67%	18.24%	8.67%	8.67%	0.00%	8.73%	0.00%	8.67%	0.00%
Cumulative Positions				812	1,184	1,779	2,080	2,483	2,783	2,926	3,227	3,370	3,527	3,527	3,685	3,685	3,842	3,842
Percent of Regional Totals				13.46%	15.66%	19.58%	19.60%	20.25%	20.00%	18.80%	18.75%	17.87%	17.06%	15.69%	15.17%	14.12%	13.76%	12.94%
Estimated Division of Kona Kai Ola																		
Permanent Employment Positions																		
Total Entry Level/Low Skill (1)																		
Annual Additions				365	167	268	135	181	135	64	135	64	71	0	71	0	71	0
Cumulative Positions				365	533	801	936	1,117	1,252	1,317	1,452	1,517	1,587	1,587	1,658	1,658	1,729	1,729
In-Migrant Workers Entry Level																		
Annual Additions				214	98	157	79	98	73	35	73	35	35	0	35	0	35	0
Cumulative Positions				214	312	468	548	645	718	753	826	861	896	896	931	931	966	966
Mid-Level/Moderate Skill (2)																		
Annual Additions				325	149	238	120	161	120	57	120	57	63	0	63	0	63	0
Cumulative Positions				325	474	712	832	993	1,113	1,170	1,291	1,348	1,411	1,411	1,474	1,474	1,537	1,537
In-Migrant Workers Mid-Level																		
Annual Additions				190	87	139	70	87	65	31	65	31	31	0	31	0	31	0
Cumulative Positions				190	277	416	487	574	639	669	734	765	796	796	828	828	859	859
Management/High Skill (3)																		
Annual Additions				122	56	89	45	60	45	21	45	21	24	0	24	0	24	0
Cumulative Positions				122	178	267	312	372	417	439	484	506	529	529	553	553	576	576
In-Migrant Workers High-Level				71	33	52	26	33	24	12	24	12	12	0	12	0	12	0
Annual Additions				71	104	156	183	215	239	251	275	287	299	299	310	310	322	322
Cumulative Positions																		

(1) Estimated at 45% of the total jobs created
(2) Estimated at 40% of the total jobs created
(3) Estimated at 15% of the total jobs created

Source: The Hallstrom Group, Inc

- The remaining 15 percent, or 576, positions will be management/high skill, with in-migrants garnering 322 openings.

Quantification of Subject Workforce Housing Impacts

The calculation of workforce housing demand generated by Kona Kai Ola is based on the assumption it is only reasonable to hold a developer to account from a housing perspective for the created jobs which "attract" in-migrating workers.

It is problematic to assign such responsibility for in-place resident workers, as they already are on the island and part of the housing market. Further, just because a business provides a job to an in-place resident does not mean they are responsible for providing housing as well.

The subject jobs are divided into the respective skill categories on Table 10, with the equivalent wages and household incomes shown for each grouping based on formulae. Among the pertinent results:

- The 966 in-migrating workers in the entry level/low skill grouping will have an average annual wage of $20,000, with 85 percent having additional incomes in the household, resulting in an average household income of $53,647 per year (in current dollars), or 106.2 percent of the County median household income.

- The 859 in-migrating workers in the mid-level/moderate skill grouping will have an average annual wage of $32,000, with 75 percent having additional incomes in the household, resulting in an average household income of $61,689 per year, or 122.2 percent of the County median household income.

- The 322 in-migrating workers in the management/high skill grouping will have an average annual wage of $50,000, with 65 percent having additional incomes in the household, resulting in an average household income of $75,730 per year, or 150 percent of the County median household income.

Generally, it is considered necessary for affordable housing opportunities to be made available for households making 120 percent or less of the County-wide average household income. About 80

TABLE 10

SUMMARY OF PROJECT EMPLOYMENT BY WAGES AND GROSS HOUSEHOLD INCOMES
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

Grouping	Entry Level/Low Skill	Mid-Level/Moderate Skill	Management/High Skill
Number of Jobs in Project	1,729	1,537	576
Percent of Total	45.0%	40.0%	15.0%
Jobs Filled by In-Migrating Workers	966	859	322
Percent of Jobs by Skill Level	55.9%	55.9%	55.9%
Percent of Total Jobs in Project	25.1%	22.4%	8.4%
Average Annual Worker Wage	$20,000	$32,000	$50,000
Estimate of Household Income			
Additional Incomes in Household (Full-Time Equivalents)	0.85	0.75	0.65
Average Additional Income Amount (1)	$33,647	$29,689	$25,730
Total Average Household Income	$53,647	$61,689	$75,730
Percent of County Median for 2007 (2)	106.2%	122.2%	150.0%

(1) Assuming average worker wage of $39,585 for 2004. Taken from DBEDT statewide data for average wage complied through 2004 at $35,191, plus increases of four percent annually, compounded.
(2) The average Hawaii County income for a family of four in 2007 is estimated at $50,500.

Source: The Hallstrom Group, Inc.

percent of the in-migrant worker households for Kona Kai Ola employees will fall into this range.

The affordability home pricing parameters for the subject in-migrating worker households are calculated on Table 11 using both prevailing governmental and conventional financing criteria.

- Entry level worker households will be able to afford a housing unit priced at up to $216,829 (government affordability guidelines) and $254,175 (conventional mortgage financing).
- Mid-level worker households will be able to afford a housing unit priced at up to $255,631 (government) and $292,139 (conventional).
- Management/high-level worker households will be able to afford a housing unit priced at up to $323,547 and $358,728, respectively.

The overall affordable unit demand created by in-migrating workers to the subject development is quantified on Table 12.

Conclusion and Comments

The total effective housing load created by in-migrant workers to Kona Kai Ola is some 1,074 units, of which circa 80 percent, or 859 units, will need to meet affordable pricing criteria.

The indicated current affordable price range for the units would be between $216,000 and $292,000.

We conclude the most appropriate development type to meet these needs would be via moderate density apartment use of some 15 units per acre. Equating to an overall need for about 57 acres of net building sites.

A series of surveys was undertaken in the business parks fronting the mauka side of Queen Kaahumanu Highway to ascertain data regarding the business and their employees, specifically in regards to in-migration and housing. A copy of the business and employee surveys are contained in the Addenda.

TABLE 11

ESTIMATE OF HOUSING PRICE AFFORDABILITY FOR PROJECT EMPLOYEES
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii

1. Based on HUD/State/County Criteria

Grouping	Entry Level/Low Skill	Mid-Level/Moderate Skill	Management/High Skill
Gross Household Monthly Income	$4,471	$5,141	$6,311
Maximum Allowable Housing Expense (1)	$1,475	$1,696	$2,083
Less Tax and Insurance Reserve	($150)	($150)	($150)
Less Mortgage Insurance Payment	($90)	($90)	($90)
Net Amount Available for Debt Service	$1,235	$1,456	$1,843
Maximum Mortgage Amount (2)	$205,988	$242,849	$307,370
Down payment at 5% of Sales Price	$10,841	$12,782	$16,177
Total Affordable Purchase Price	$216,829	$255,631	$323,547

2. Based on Conventional Financing Criteria

Grouping	Entry Level/Low Skill	Mid-Level/Moderate Skill	Management/High Skill
Gross Household Monthly Income	$4,471	$5,141	$6,311
Maximum Allowable Housing Expense (3)	$1,252	$1,439	$1,767
Maximum Mortgage Amount (4)	$203,340	$233,711	$286,982
Down payment at 20% of Sales Price (5)	$50,835	$58,428	$71,746
Total Affordable Purchase Price	$254,175	$292,139	$358,728

(1) Based on HUD/State/County affordability criteria at 33%.
(2) Assuming 6.00% annual interest and 30 year mortgage.
(3) Conventional financing with maximum monthly mortgage payment at 28% of gross income. No reserves of mortgage insurance required.
(4) Assuming 6.25% annual interest and 30 year mortgage.
(5) Conventional financing standard.

Source: State of Hawaii, Hawaii County and The Hallstrom Group, Inc.

TABLE 12

CALCULATION OF AFFORDABLE UNIT DEMAND CREATED BY IN-MIGRATING WORKERS TO SUBJECT DEVELOPMENT
Housing Demand Analysis of the Proposed Kona Kai Ola Community
Kealakehe, North Kona, Hawaii
Moderate, Stabilized Estimate

Total New On-Site Jobs Created by Project	3,842
Percentage of In-Migrating Workers at Kona Kai Ola	55.88%
Estimated Total Full Time In-Migrating Workers to Project	2,147
Average Adults per Household	2
Total Unit Housing Load Created by Project Due to In-Migration	1,074
Percentage at or Below Housing Affordability Standards (1)	80.0%
Affordable Housing Units Required	859
Indicated Affordability Price Range	$216,000 to $292,000
Probable Development Type	Moderate Density Apartment
Urban Acreage Required to Meet Demand (2)	57

(1) With household incomes below 120% of the County median level.
(2) Assuming multifamily housing development to meet demands with average of 15 units per acre.

Source: The Hallstrom Group, Inc.

The surveys results, which confirm our macro-analysis findings, were used to create and/or modify some of the West Hawaii and subject projections.

Specifically, a large majority of area workers wanted to relocate to nearer (or in) the K to K corridor to avoid the increasing traffic congestion of central Kailua-Kona and more southerly areas. Waikoloa Village was the most often named secondary housing alternative.

CERTIFICATION

The undersigned do hereby certify that, to the best of our knowledge and belief, the statements of fact contained in this report are true and correct. It is further certified that the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions. We further certify that we have no present or prospective interest in the property that is the subject of this report, and have no personal interest with respect to the parties involved. We have no bias with respect to the property that is the subject of this report or the parties involved with this assignment. Our engagement in this assignment was not contingent upon developing or reporting predetermined results. Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal. The appraisal analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice. The use of this report is subject to the requirements of the Appraisal Institute relating to review by duly authorized representatives. The undersigned certify that they have made personal inspections of the property that is the subject of this report. No other persons provided significant real property appraisal assistance other than the undersigned.

The Appraisal Institute conducts programs of continuing education for their designated members. As of the date of this report, James E. Hallstrom, Jr. has completed the requirements of the continuing education program of the Appraisal Institute.

James E. Hallstrom, Jr., MAI, CRE
Hawaii State Certified
General Appraiser, CGA-178
Exp. Date December 31, 2007

Tom W. Holliday

/as

4242HR01

ADDENDA

EMPLOYEE HOUSING SURVEY

Name of Employer: _____

Work Position/Duties: _____

Area/town where you live now: _____

Area/town where you would like to live (if different): _____

Do you plan on moving in the next three years: _____

If so, will you move somewhere else on BI or off-island: _____

How long is your commute to work (minutes or miles): _____

Do you rent or own your residence: _____

How many people are in your household: _____

Other than any children you may have, is your household multi-generational, have extended family or non-family members: _____

Were you born on the Big Island: _____

If you were not born on BI, did you come over as a youth or adult: _____

Where did you go to high school: _____

Survey by: The Hallstrom Group, Inc.
Pauahi Tower, Suite 1350
1001 Bishop Street
Honolulu, Hawaii 96813

Prepared for Jacoby Development, Inc

BUSINESS SURVEY

Name of Business: _____

Location/Address: _____

Business Type: _____

Franchise or Independent: _____

Number of Workers: Total _____
Full-Time _____
Part-Time _____

Is this a new business, an expansion (new outlet) for an existing business, or one that has relocated from elsewhere on BI to this location? _____

Is your business impacted by a shortage of workforce housing? _____

Survey by: The Hallstrom Group, Inc.
Pauahi Tower, Suite 1350
1001 Bishop Street
Honolulu, Hawaii 96813

Prepared for Jacoby Development, Inc.

LIMITING CONDITIONS AND ASSUMPTIONS

The research, analysis, conclusions, and certification for valuation or market studies performed by The Hallstrom Group, Inc. are subject to and influenced by the following:

- The report expresses the opinion of the signers as of the date stated in the letter of transmittal, and in no way has been contingent upon the reporting of specified values or findings. It is based upon the then present condition of the national and local economy and the then purchasing power of the dollar.

- Legal descriptions used within the report are taken from official documents recorded with the State of Hawaii, Bureau of Conveyances, or have been furnished by the client, and are assumed to be correct. No survey is made for purposes of the report.

- Any sketches, maps, plot plans, and photographs included in the report are intended only to show spatial relationships and/or assist the reader in visualizing the property. They are not measured surveys or maps and we are not responsible for their accuracy or interpretive quality.

- It is assumed that the subject property is free and clear of any and all encumbrances other than those referred to herein, and no responsibility is assumed for matters of a legal nature. The report is not to be construed as rendering any opinion of title, which is assumed to be good and marketable. No title information or data regarding easements which might adversely affect the use, access, or development of the property, other than that referenced in the report, was found or provided. The property is analyzed as though under responsible ownership and competent management.

- Any architectural plans and/or specifications examined assume completion of the improvements in general conformance with those documents in a timely and workmanlike manner.

- Preparation for, attendance, or testimony at any court or administrative hearing in connection with this report shall not be required unless prior arrangements have been made therefor.

- If the report contains an allocation of value between land and improvements, such allocation applies only under the existing program of utilization. The separate valuations for land and building must not be used in conjunction with any other purpose and are invalid if so used.

- If the report contains a valuation relating to a geographical portion or tract of real estate, the value reported for such geographical portion relates to such portion only and should not be construed as applying with equal validity to other portions of the larger parcel or tract; and the value reported for such geographical portion plus the value of all other geographical portions may or may not equal the value of the entire parcel or tract considered as an entity.

- If the report contains a valuation relating to an estate in land that is less than the whole fee simple estate, the value reported for such estate relates to a fractional interest only in the real estate involved, and the value of this fractional interest plus the value of all other fractional interest may or may not equal to the value of the entire fee simple estate considered as a whole.

- It is assumed that there are no hidden or inapparent conditions of the property, subsoil, or structures which would render it more or less valuable; we assume no responsibility for such conditions or for engineering which might be required to discover such factors.

- Nothing in the report should be deemed a certification or guaranty as to the structural and/or mechanical (electrical, heating, air-conditioning, and plumbing) soundness of the building(s) and associated mechanical systems, unless otherwise noted.

- Information, estimates, and opinions provided by third parties and contained in this report were obtained from sources considered reliable and believed to be true and correct. However, no responsibility is assumed for possible misinformation.

- Possession of the report, or a copy thereof, does not carry with it the right of publication, and the report may not be used by any person or organization except the client without the previous written consent of the appraiser, and then only in its entirety. If the client releases or disseminates the reports to others without the consent of the appraiser, the client hereby agrees to hold the appraiser harmless, and to indemnify the analysts from any liability, damages, or losses which the analysts might suffer, for any reason whatsoever, by reason of dissemination of the report by the client. Further, if legal action is brought against the analyst by a party other than the client concerning the report or the opinions stated therein, the client agrees, in addition to indemnifying the analysts for any damages or losses, to defend said analysts in said action at client's expense. However, nothing herein shall prohibit the client or analysts from disclosing said report or opinions contained therein as may be required by applicable law.

- Disclosure of the contents of this report is governed by the By-Laws and Regulations of the Appraisal Institute. Neither all nor any part of the contents of this report

(especially any conclusions as to value, the identity of the appraisers or the firm which they are connected, or any reference to the Appraisal Institute or to the MAI designation) shall be disseminated to the public through advertising media, public relations media, news media, sales media, or any public means of communication without the prior consent and approval of the appraisers.

- Unless otherwise stated in this report, the existence of hazardous material, which may or may not be present on the property, was not observed by the appraiser. The appraiser has no knowledge of the existence of such materials on or in the property. The appraiser, however, is not qualified to detect such substances. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for any such conditions, or for any expertise or engineering knowledge required to discover them. The client is urged to retain an expert in this field, if desired.

- The Americans with Disabilities Act (ADA) became effective January 26, 1992. We have not made a specific compliance survey and analysis of this property to determine whether or not it is in conformity with the various detailed requirements of the ADA. It is possible that a compliance survey together with a detailed analysis of the requirements of the ADA could reveal that the property is not in compliance with one or more of the requirements of the act. If so, this fact could have a negative effect upon the value of the property. We did not consider possible noncompliance with the requirements of ADA in estimating the value of the property.

- The function of this report is for the sole purpose(s) stated herein. It may not be used in connection with any proposed or future construction for a real estate syndicate(s), real estate investment trust(s) or limited partnership to solicit investors or limited partners, and may not be relied upon for such purposes.

- The appraiser's conclusion of value is based upon the assumption that there are no hidden or unapparent conditions of the property that might prevent buildability. The appraiser recommends that due diligence be conducted through the local building department or the municipality to investigate buildability and whether the property is suitable for its intended use. The appraiser makes no such representations, guarantees or warranties.

THE HALLSTROM GROUP INC.
REAL ESTATE CONSULTANTS & APPRAISERS

PROFESSIONAL BACKGROUND AND SERVICES

The Hallstrom Group, Inc. is a Honolulu based independent professional organization that provides a wide scope of real estate consulting services throughout the State of Hawaii with particular emphasis on valuation studies. The purpose of the firm is to assist clients in formulating realistic real estate decisions. It provides solutions to complex issues by delivering thoroughly researched, objective analyses in a timely manner. Focusing on specific client problems and needs, and employing a broad range of tools including after-tax cash flow simulations and feasibility analyses, the firm minimizes the financial risks inherent in the real estate decision making process.

The principals and associates of the firm have been professionally trained, are experienced in Hawaiian real estate, and are actively associated with the Appraisal Institute and the Counselors of Real Estate, nationally recognized real estate appraisal and counseling organizations.

The real estate appraisals prepared by The Hallstrom Group accomplish a variety of needs and function to provide professional value opinions for such purposes as mortgage loans, investment decisions, lease negotiations and arbitrations, condemnations, assessment appeals, and the formation of policy decisions. Valuation assignments cover a spectrum of property types including existing and proposed resort and residential developments, industrial properties, high-rise office buildings and condominiums, shopping centers, subdivisions, apartments, residential leased fee conversions, special purpose properties, and vacant acreage, as well as property assemblages and portfolio reviews.

Market studies are research-intensive, analytical tools oriented to provide insight into investment opportunities and development challenges, and range in focus from highest and best use determinations for a specific site or improved property, to an evaluation of multiple (present and future) demand and supply characteristics for long-term, mixed-use projects. Market studies are commissioned for a variety of purposes where timely market information, insightful trends analyses, and perceptive conceptual conclusions or recommendations are critical. Uses include the formation of development strategies, bases for capital commitment decisions, evidence of appropriateness for state and county land use classification petitions, fiscal and social impact evaluations, and the identification of alternative economic use/conversion opportunities.

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PROFESSIONAL QUALIFICATIONS OF JAMES E. HALLSTROM, JR., MAI, CRE

Business Background	President	The Hallstrom Group, Inc. Honolulu, Hawaii (1980 - Present)
	Former Principal	Hastings, Martin, Hallstrom and Chew, Ltd., Honolulu, Hawaii (1972-1980)
	Former Real Property Appraiser and Analyst	Administration, Inc., a subsidiary of C. Brewer and Company, Limited Honolulu, Hawaii (1971-1972)
	Former Senior Real Property Appraiser and Analyst	Opitz Realty, Madison, Wisconsin (1969-1971)

National Designations and Memberships

- CRE Designation (1998) - The Counselors of Real Estate
- MAI Designation (1976) - American Institute of Real Estate Appraisers
- SRPA Designation (1975) - Society of Real Estate Appraisers

The American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated in 1991, forming the Appraisal Institute (AI).

Education

- M.S. (Real Estate Appraisal and Investment Analysis) 1971, University of Wisconsin at Madison
- B.A. (Economics) 1969, Brigham Young University at Provo
- Additional numerous specialized real estate studies in connection with qualifying for national professional designations, and uninterrupted Continuing Education.
- Completed Continuing Education requirements with the Appraisal Institute through 2007.

Professional Involvement

- Former President and Officer for Hawaii AIREA and SREA Chapters
- Instructor for Society of Real Estate Appraisers Course 101, "Introduction to Appraising Real Property" and Course 201, "Principles of Income Property Appraising"
- Contributing author to the "Hawaii Real Estate Investor"
- Lecturer at many professional seminars and clinics.
- Appointed numerous times as an Arbitrator and Mediator.

Qualified Expert Witness

Federal and State Courts
State Land Use and County Hearings
Arbitration Proceedings

State of Hawaii Certification

Certified General Appraiser, License Number CGA-178, Exp. Date December 31, 2007

Community Service

Active registered member of the Boy Scouts of America; former Director of Le Jardin Academy; former Advisory Board Member of the School of Business, Brigham Young University, Hawaii Campus; Director of Hawaii Reserves, Inc.

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PROFESSIONAL QUALIFICATIONS OF THOMAS W. HOLLIDAY

Business Background	Senior Analyst	The Hallstrom Group, Inc. Honolulu, Hawaii Since 1980
	Former Staff Appraiser	Davis-Baker Appraisal Co. Avalon, Santa Catalina Island, California

Education

- B.A. (Communications/Journalism) 1978 California State University at Fullerton
- SREA Course 201- Principles of Income Property Appraising
- Expert witness testimony before State of Hawaii Land Use Commission and various state and county boards and agencies since 1983.
- Numerous professional seminars and clinics
- Contributing author to Hawaii Real Estate Investor, Honolulu Star Bulletin

On January 1, 1991, the American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated, forming the Appraisal Institute (AI).

Recent Kauai and Neighbor Island Assignments

- Market Study, Economic Impact Analyses and Public Costs/Benefits Assessments
  - -- Village at Poipu (Resort/Residential)
  - -- Ocean Bay Plantation (Resort/Residential)
  - -- Waipono/Puhi (Mixed-Use Planned Development)
  - -- Eleele Commercial Expansion (Commercial)
  - -- Kona Kai Ola (Mixed-Use Resort Community)
  - -- Waikoloa Highlands (Residential)
  - -- Waikoloa Heights (Mixed-Use Residential Development)
  - -- Upcountry Town Center (Mixed-Use Planned Development)
  - -- Maui Lani (Residential and Industrial Components of Master Planned Community)
  - -- Maui Business Park, Phase II (Industrial/Commercial)
  - -- Four Seasons Private Estates and Residences Club (Resort/Residential)
  - -- Kualono Subdivision (Residential)
  - -- Kapalua Mauka (Master Planned Community)
  - -- Hailiimaile (Mixed-Use Master Planned Community)
  - -- Pulelehua (Master Planned Community)
  - -- Westin Kaanapali Ocean Villas Expansion (Resort/Timeshare)

- Major Valuation Assignments
  - -- Coco Palms Resort
  - -- Grand Hyatt Kauai
  - -- Islander on the Beach
  - -- Waimea Plantation Cottages
  - -- Coconut Beach Resort
  - -- Keauhou Beach Hotel
  - -- Sheraton Maui Hotel
  - -- Outrigger Wailea Resort Hotel
  - -- Maui Lu Hotel
  - -- Coconut Grove Condominiums
  - -- Palauea Bay Holdings
  - -- Wailea Ranch
  - -- Maui Coast Hotel
  - -- Westin Maui Hotel
  - -- Maui Marriott Hotel
  - -- Waihee Beach
  - -- Kapalua Bay Hotel and The Shops at Kapalua

Email Address TWH@HallstromGroup.com

Appendix D

Air Quality Study

By B.D. Neal & Associates

AIR QUALITY STUDY

FOR THE PROPOSED

KONA KAI OLA PROJECT

KEALAKEHE, NORTH KONA, HAWAII

Prepared for:

Jacoby Development, Inc.

November 2006

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1.0 SUMMARY

Jacoby Development, Inc. is proposing to develop the Kona Kai Ola at Kealakehe Project on the island of Hawaii. The proposed project will include a marina, ocean recreation and education facilities, hotel and timeshare units, commercial space and other related infrastructure and support facilities. Development of the project is expected to be completed and fully occupied by 2020. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities and suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide which are more stringent than the national standards.

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the project area is very much affected by its near coastal situation and by nearby mountains. Winds are predominantly light and variable, although kona storms generate occasional strong winds from the south or southwest during winter. Temperatures in the project area are generally very consistent and moderate with average daily temperatures ranging from about 65°F to 85°F. The extreme minimum temperature recorded at the nearby Old Kona Airport is 47°F, while the extreme maximum temperature is

93°F. Average annual rainfall in the area amounts to about 25 inches with each month typically contributing about 2 inches.

Except for periodic impacts from volcanic emissions (vog) and possibly occasional localized impacts from traffic congestion, the present air quality of the project area is believed to be relatively good. The limited air quality data that are available for the area from the Department of Health indicate that (despite the vog) concentrations are well within state and national air quality standards.

If the proposed project is given the necessary approvals to proceed, it may be inevitable that some short- and/or long-term impacts on air quality will occur either directly or indirectly as a consequence of project construction and use. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan must be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Monitoring dust at the project boundary during the period of construction could be considered as

a means to evaluate the effectiveness of the project dust control program. Exhaust emissions can be mitigated by moving construction equipment and workers to and from the project site during off-peak traffic hours.

After construction, motor vehicles coming to and from the proposed development will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, a computerized air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without the proposed project. During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are within both the state and the national ambient air quality standards. In the year 2020 without the project, carbon monoxide concentrations were generally predicted to decrease in the project area even though larger volumes of traffic are expected. This is the result of older, more-polluting vehicles being retired over time. With the project in the year 2020, carbon monoxide concentrations were estimated to increase by about 25 percent compared to the without-project case. Even with the increase, worst-case concentrations should remain within both national and state standards through the year 2020. Implementing mitigation measures for traffic-related air quality impacts is probably unnecessary and unwarranted.

2.0 INTRODUCTION

Jacoby Development, Inc. has been selected by the State to develop Kona Kai Ola at Kealakehe on approximately 530 acres of mostly vacant lands near Honokohau Harbor on the island of Hawaii (see Figure 1 for project location). The development site includes 200

acres leased from the Department of Hawaiian Homelands and 330 adjacent acres under the jurisdiction of the Department of Land and Natural Resources. The project site is bounded on the north by Honokohau Boat Harbor and the Kaloko-Honokohau National Historical Park; on the south by the Queen Liliuokalani Trust parcel and the Kealakehe Wastewater Treatment Plant; on the west by the Pacific Ocean shoreline; and on the east by Queen Kaahumanu Highway. The development will include a 45-acre marina and associated facilities, ocean recreation and education facilities, water features, 670 to 770 hotel rooms, 1,800 timeshare units, commercial space, open space, roadways, utilities and resort support facilities. Construction of the project is expected to commence during 2007 or 2008, and full development and occupancy is planned by 2020.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short- and long-term direct and indirect air quality impacts that could result from construction and use of the proposed facilities as planned. Measures to mitigate project impacts are suggested where possible and appropriate.

3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and

lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. The U.S. Environmental Protection Agency (EPA) is currently working on a plan to phase out the

national 1-hour ozone standard in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards were challenged in federal court. A Supreme Court ruling was issued during February 2001, and as a result, the new standards for particulate were implemented during 2005. To date, the Hawaii Department of Health has not updated the state particulate standards. In September 2001, the state vacated the state 1-hour standard for ozone and an 8-hour standard was adopted.

4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

The site of the proposed project is located near the midpoint of the western coast of the island of Hawaii. The topography of Hawaii Island is dominated by the great volcanic masses of Mauna Loa (13,653 feet), Mauna Kea (13,796 feet), and of Hualalai, the Kohala Mountains and Kilauea. The island consists entirely of the

slopes of these mountains and of the broad saddles between them. Mauna Loa and Kilauea, located on the southern half of the island, are still active volcanoes.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. Nearly the entire western coast of the island of Hawaii, however, is sheltered from the trade winds by high mountains, except when unusually strong trade winds sweep through the saddle between the Kohala Mountains and Mauna Kea and reach some areas to the lee. Due to wind shadow effects caused by the terrain, winds in the project area are predominantly light and variable. Local winds such as land/sea breezes and/or upslope/downslope winds dominate the wind pattern for the area. During the daytime, winds typically move onshore because of seabreeze and/or upslope effects. At night, winds generally are land breezes and/or drainage winds that move downslope and out to sea. During winter, occasional strong winds from the south or southwest occur in association with the passage of winter storm systems.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depends to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most.

The project site's leeward location results in a larger temperature profile compared to windward locations at the same elevation. At the Old Kona Airport, located a few miles south of the project site, average daily minimum and maximum temperatures are 67°F and 83°F, respectively [1]. The extreme minimum temperature on record at this location is 47°F, and the extreme maximum is 93°F. Temperatures at the project site are very similar.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 is the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Kona area, stability classes 5 or 6 typically occur during the nighttime or early morning hours when temperature inversions form due to radiational cooling or to drainage flow from the mountainous interior of the island. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur,

however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3000 feet (1000 meters).

Rainfall can have a beneficial affect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The climate of the project area is wetter than might be expected for a leeward location. This is due to the persistent onshore and upslope movement of marine air caused by both eddie and seabreeze or mountain slope effects. Some of the rainfall occurs during summer afternoons and evenings as a result of this onshore and upslope movement of moisture-laden marine air, and some occurs in conjunction with winter storms. At the Old Kona Airport, average annual rainfall amounts to about 25 inches with each month registering about 2 inches [1]. Rainfall at the project site is probably somewhere near this amount.

5.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from vehicular, industrial, natural and/or agricultural sources. Table 2 presents an air pollutant emission summary for the island of Hawaii for calendar year 1993. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, much of the manmade particulate emissions on Hawaii originate from area sources, such as the mineral products industry

and agriculture. Manmade sulfur oxides are emitted almost exclusively by point sources, such as power plants and other fuel-burning industries. Nitrogen oxides emissions emanate predominantly from area sources (mostly motor vehicle traffic), although industrial point sources contribute a significant share. The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic), while hydrocarbons are emitted mainly from point sources.

It should be noted that Hawaii Island is unique from the other islands in the state in terms of the natural volcanic air pollution emissions that occur. Volcanic emissions periodically plague the project area. This is especially so since the latest eruption phase of the Kilauea Volcano began in 1983. Air pollution emissions from the Hawaiian volcanoes consist primarily of sulfur dioxide. After entering the atmosphere, these sulfur dioxide emissions are carried away by the wind and either washed out as acid rain or gradually transformed into particulate sulfates or acid aerosols. Although emissions from Kilauea are vented on the other side of a mountain barrier more than 50 miles east of the project site, the prevailing wind patterns eventually carry some of the emissions into the Kona area. These emissions can be seen in the form of the volcanic haze (vog) which persistently hangs over the area.

The major industrial source of air pollution in the project vicinity is Hawaii Electric Light Company's Keahole Power Plant, which is located about 4 miles to the north. Air pollution emissions from Keahole Power Plant consist mostly of sulfur dioxide and oxides of nitrogen.

Queen Kaahumanu Highway, which borders the project site on the mauka side, is the region's major arterial roadway. Downslope winds during the morning will tend to carry emissions from motor vehicles traversing this roadway toward the project area, while afternoon onshore winds will carry emissions away from the project.

The State Department of Health operates a network of air quality monitoring stations at various locations around the state. Unfortunately, very limited data are available for Hawaii Island, and even less data are available for the Kona area specifically. During the most recent 5-year period for which data have been reported (2000-2004), the Department of Health operated an air quality monitoring site in the Kealakekua area for measuring sulfur dioxide. Particulate was also monitored at this site, but monitoring for this parameter was discontinued during 2000. As indicated in Table 3, measurements of sulfur dioxide concentrations at this location during the 2000-2004 monitoring period were consistently low with annual average concentrations of 6 to 10 $\mu g/m^3$, which represents about 10 percent of the state and national standard. The highest annual second-highest 3-hour and 24-hour concentrations (which are most relevant to the standards) for these five years were 58 and 22 $\mu g/m^3$, respectively; these are about 6 percent or less of the applicable standards. No exceedances of the state/national 3-hour and 24-hour AAQS for sulfur dioxide were recorded. The annual average particulate concentration for 2000 was 18 $\mu g/m^3$, which equates to about 36 percent of the state/national standard. The second-highest 24-hour concentration of particulate matter, 23 $\mu g/m^3$, is about 15 percent of the state/national standard, and there were no violations of the state/national AAQS during the 2000 monitoring period. Monitoring of particulate matter was discontinued at this site during June 2000.

At this time, there are no reported measurements of lead, ozone, nitrogen dioxide or carbon monoxide in the project vicinity. These are primarily motor vehicle related air pollutants. Lead, ozone and nitrogen dioxide typically are regional scale problems. Concentrations of lead and nitrogen dioxide generally have not been found to exceed AAQS elsewhere in the state. Ozone concentrations, on the other hand, have been found to exceed the state standard at times at Sand Island on Oahu. Carbon monoxide air pollution typically is a microscale problem caused by congested motor vehicular traffic. In traffic congested areas such as urban Honolulu, carbon monoxide concentrations have been found to occasionally exceed the state AAQS. Present concentrations of carbon monoxide in the project area are estimated later in this study based on computer modeling of motor vehicle emissions.

6.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [2] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawaii Air Pollution Control Regulations [3] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule

as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Project construction activities will also likely obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. The only means to alleviate this problem will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

7.0 LONG-TERM IMPACTS OF PROJECT

After construction is completed, use of the proposed facilities will result in increased motor vehicle traffic in the project area, potentially causing long-term impacts on ambient air quality. Motor vehicles with gasoline-powered engines are

significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminates.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This legislation requires further emission reductions, which have been phased in since 1994. More recently, additional restrictions were signed into law during the Clinton administration, which will begin to take effect during the next decade. The added restrictions on emissions from new motor vehicles will lower average emissions each year as more and more older vehicles leave the state's roadways. It is estimated that carbon monoxide emissions, for example, will go down by an average of about 30 to 40 percent per vehicle during the next 10 years due to the replacement of older vehicles with newer models.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas nitrogen oxides air pollution most often is a regional issue that cannot be addressed by a single new development.

For this project, three scenarios were selected for the carbon monoxide modeling study: (1) year 2006 with present conditions, (2) year 2020 without the project, and (3) year 2020 with the project. To begin the modeling study of the three scenarios, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. For this study, several of the key intersections identified in the traffic study were also selected for air quality analysis. These included the following intersections:

- Kealakehe Parkway at Queen Kaahumanu Highway
- Police Access Road at Queen Kaahumanu Highway
- Makala Boulevard at Queen Kaahumanu Highway

The traffic impact report for the project [4] describes the projected future traffic conditions and laneage configurations of these intersections in detail. In performing the air quality impact analysis, it was assumed that all recommended traffic mitigation measures would be implemented.

The main objective of the modeling study was to estimate maximum 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can be made. Comparison of the estimated values to the national and state AAQS was also used to provide another measure of significance.

Maximum carbon monoxide concentrations typically coincide with peak traffic periods. The traffic impact assessment report evaluated morning and afternoon peak traffic periods. These same periods were evaluated in the air quality impact assessment.

The EPA computer model MOBILE6 [5] was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILE6 is vehicle mix. Unless very detailed information is available, national average values are typically assumed, which is what was used for the present study. Based on national average vehicle mix figures, the present vehicle mix in the project area was estimated to be 40.9% light-duty gasoline-powered automobiles, 46.2% light-duty gasoline-powered trucks and vans, 3.6% heavy-duty gasoline-powered vehicles, 0.2% light-duty diesel-powered vehicles, 8.5% heavy-duty diesel-powered trucks and buses, and 0.6% motorcycles. For the future scenarios studied, the vehicle mix was estimated to change slightly with fewer light-duty gasoline-powered automobiles and more light-duty gasoline-powered trucks and vans.

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE6 generally have an inverse relationship to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE6, these data were then input to an atmospheric dispersion model. EPA air quality modeling guidelines [6] currently recommend that the computer model CAL3QHC [7] be used to assess carbon monoxide concentrations at roadway

intersections, or in areas where its use has previously been established, CALINE4 [8] may be used. Until a few years ago, CALINE4 was used extensively in Hawaii to assess air quality impacts at roadway intersections. In December 1997, the California Department of Transportation recommended that the intersection mode of CALINE4 no longer be used because it was thought the model has become outdated. Studies have shown that CALINE4 may tend to over-predict maximum concentrations in some situations. Therefore, CAL3QHC was used for the subject analysis.

CAL3QHC was developed for the U.S. EPA to simulate vehicular movement, vehicle queuing and atmospheric dispersion of vehicular emissions near roadway intersections. It is designed to predict 1-hour average pollutant concentrations near roadway intersections based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Input peak-hour traffic data were obtained from the traffic study cited previously. This included vehicle approach volumes, saturation capacity estimates, intersection laneage and signal timings (where applicable). All emission factors that were input to CAL3QHC for free-flow traffic on roadways were obtained from MOBILE6 based on assumed free-flow vehicle speeds corresponding to the posted speed limits (25 to 35 mph depending on location).

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Concentrations predicted by air quality models generally are not considered valid within the roadway-mixing zone. The roadway-mixing zone is usually taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of

a cross street. Model receptor sites were thus located at the edges of the mixing zones near all intersections that were studied for all three scenarios. This implies that pedestrian sidewalks either already exist or are assumed to exist in the future. All receptor heights were placed at 1.8 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is atmospheric stability category. For these analyses, atmospheric stability category 6 was assumed for the morning cases, while atmospheric stability category 4 was assumed for the afternoon cases. These are the most conservative stability categories that are generally used for estimating worst-case pollutant dispersion within suburban areas for these periods. A surface roughness length of 100 cm and a mixing height of 1000 meters were used in all cases. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. Concentration estimates were calculated at wind directions of every 5 degrees.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at low levels. Thus, background contributions of carbon monoxide from sources or roadways not directly considered in the analysis were accounted for by adding a background concentration of 0.5 ppm to all predicted concentrations for 2006. Although increased traffic is expected to occur within the project area during the next several years with or without the project, background carbon monoxide concentrations may not change significantly since individual emissions from motor vehicles are forecast to decrease with time.

Hence, a background value of 0.5 ppm was assumed to persist for the future scenarios studied.

Predicted Worst-Case 1-Hour Concentrations

Table 4 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for three scenarios: year 2006 with existing traffic, year 2020 without the project and year 2020 with the project. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the highest estimated 1-hour concentration within the project vicinity for the present (2006) case was 6.7 mg/m^3. This was projected to occur during the morning peak traffic hour near the intersection of Makala Boulevard and Queen Kaahumanu Highway. Concentrations at other locations and times studied were 6.3 mg/m^3 or lower. All predicted worst-case 1-hour concentrations for the 2006 scenario were within both the national AAQS of 40 mg/m^3 and the state standard of 10 mg/m^3.

In the year 2020 without the proposed project, the highest worst-case 1-hour concentration was predicted to occur during the morning at the intersection of Kealakehe Parkway and Queen Kaahumanu Highway. A value of 5.6 mg/m^3 was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times studied for the 2020 without project scenario ranged between 2.9 and 4.5 mg/m^3. Compared to the existing case, concentrations remained about the same or decreased. All

projected worst-case concentrations for this scenario remained within the state and national standards.

In the year 2020 with the proposed project, the predicted highest worst-case 1-hour concentration continued to occur during the morning at the intersection of Kealakehe Parkway and Queen Kaahumanu Highway with a value of 7.0 mg/m^3, which is about 25 percent higher compared to the without project case. Other concentrations for this scenario ranged between 3.4 and 5.2 mg/m^3. Although the predicted concentrations increased at the three locations studied compared to the without project scenario, the values remained within the state and federal standards.

Predicted Worst-Case 8-Hour Concentrations

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One study based on modeling [9] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [10] recommend using a value of 0.7 unless a locally derived persistence factor is available. Recent monitoring data for locations on Oahu reported by the Department of Health [11] suggest that this factor may range between about 0.2 and 0.6 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a

1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentrations.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5. For the 2006 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the two locations studied were 3.2 mg/m^3 at the Kealakehe Parkway/Queen Kaahumanu Highway intersection and 3.4 mg/m^3 at the Makala Boulevard/Queen Kaahumanu Highway intersection. The estimated worst-case concentrations for the existing case were within both the state standard of 5 mg/m^3 and the national limit of 10 mg/m^3.

For the year 2020 without project scenario, worst-case concentrations ranged between 2.0 and 2.8 mg/m^3, with the highest concentration occurring at Kealakehe Parkway and Queen Kaahumanu Highway. All predicted concentrations were within the standards.

For the 2020 with project scenario, worst-case concentrations increased at all three locations studied compared to the without project case. The worst-case concentrations ranged from 2.4 to 3.5 mg/m^3. All predicted 8-hour concentrations for this scenario were within both the national and the state AAQS.

Conservativeness of Estimates

The results of this study reflect several assumptions that were made concerning both traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an

hour is extremely unlikely and may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above. The 8-hour estimates are also conservative in that it is unlikely that anyone would occupy the assumed receptor sites (within 3 m of the roadways) for a period of 8 hours.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program and to adjust the program if necessary.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will

also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

After construction of the proposed project is completed and it is fully occupied, carbon monoxide concentrations in the project area will likely increase due to emissions from project-related motor vehicle traffic, but worst-case concentrations should remain within both the state and the national ambient air quality standards. Implementing any air quality mitigation measures for long-term traffic-related impacts is probably unnecessary and unwarranted.

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Figure 1 - Project Location

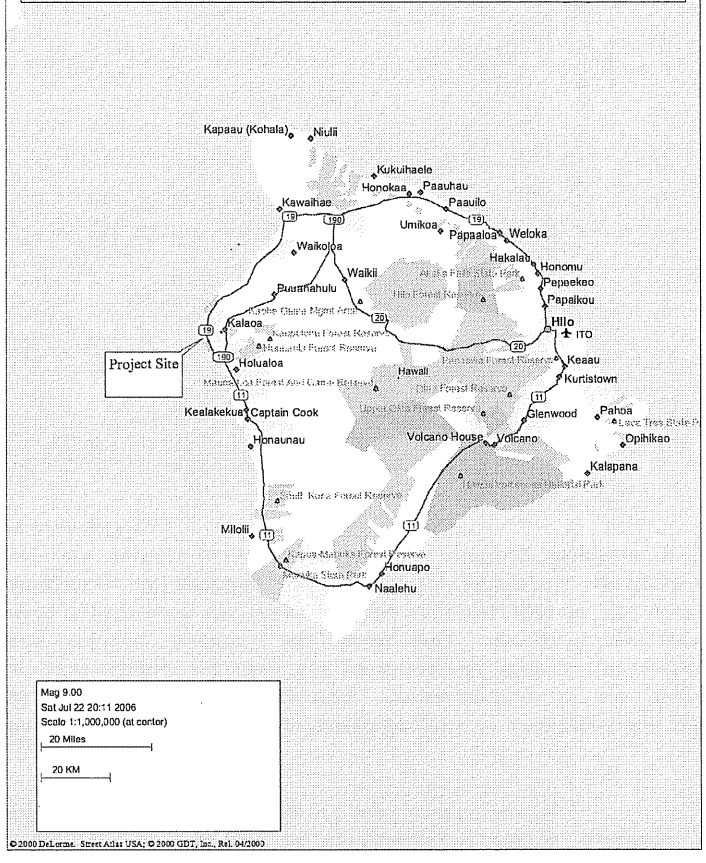

Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	$\mu g/m^3$	Annual	50[a]	50[a]	50
		24 Hours	150[b]	150[b]	150[c]
Particulate Matter (<2.5 microns)	$\mu g/m^3$	Annual	15[a]	15[a]	-
		24 Hours	65[d]	65[d]	-
Sulfur Dioxide	$\mu g/m^3$	Annual	80	-	80
		24 Hours	365[c]	-	365[c]
		3 Hours	-	1300[c]	1300[c]
Nitrogen Dioxide	$\mu g/m^3$	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours	10[c]	-	5[c]
		1 Hour	40[c]	-	10[c]
Ozone	$\mu g/m^3$	8 Hours	157[e]	157[e]	157[e]
		1 Hour	235[f]	235[f]	-
Lead	$\mu g/m^3$	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	$\mu g/m^3$	1 Hour	-	-	35[c]

[a] Three-year average of annual arithmetic mean.

[b] 99th percentile value averaged over three years.

[c] Not to be exceeded more than once per year.

[d] 98th percentile value averaged over three years.

[e] Three-year average of fourth-highest daily 8-hour maximum.

[f] Standard is attained when the expected number of exceedances is less than or equal to 1.

Table 2

AIR POLLUTION EMISSIONS INVENTORY FOR ISLAND OF HAWAII, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	30,311	9,157	39,468
Sulfur Oxides	9,345	nil	9,345
Nitrogen Oxides	4,054	8,858	12,912
Carbon Monoxide	3,357	23,934	27,291
Hydrocarbons	1,477	203	1,680

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Table 3

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST KONA KAI OLA PROJECT

Parameter / Location	2000	2001	2002	2003	2004
Sulfur Dioxide / Kealakekua, Kona					
3-Hour Averaging Period:					
No. of Samples	2897	2869	2877	2886	2513
Highest Concentration ($\mu g/m^3$)	50	38	50	91	55
2nd Highest Concentration ($\mu g/m^3$)	49	37	37	58	54
No. of State AAQS Exceedances	0	0	0	0	0
24-Hour Averaging Period:					
No. of Samples	365	360	362	364	317
Highest Concentration ($\mu g/m^3$)	25	22	19	39	21
2nd Highest Concentration ($\mu g/m^3$)	16	20	18	22	19
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration ($\mu g/m^3$)	6	8	8	10	8
Particulate (PM-10) / Kealakekua, Kona					
24-Hour Averaging Period:					
No. of Samples	17	-	-	-	-
Highest Concentration ($\mu g/m^3$)	23	-	-	-	-
2nd Highest Concentration ($\mu g/m^3$)	23	-	-	-	-
No. of State AAQS Exceedances	0	-	-	-	-
Annual Average Concentration ($\mu g/m^3$)	18	-	-	-	-

Source: State of Hawaii Department of Health, "Annual Summaries, Hawaii Air Quality Data, 2000 - 2004"

Table 4

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR KONA KAI OLA PROJECT (milligrams per cubic meter)

Roadway Intersection	Year/Scenario					
	2006/Present		2020/Without Project		2020/With Project	
	AM	PM	AM	PM	AM	PM
Kealakehe Parkway at Queen Kaahumanu Hwy	6.3	3.8	5.6	3.9	7.0	5.2
Police Access Road at Queen Kaahumanu Hwy	-	-	4.0	2.9	4.8	3.7
Makala Blvd at Queen Kaahumanu Hwy	6.7	4.1	4.5	3.0	5.0	3.4

Hawaii State AAQS: 10
National AAQS: 40

Table 5

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR KONA KAI OLA PROJECT (milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	2006/Present	2020/Without Project	2020/With Project
Kealakehe Parkway at Queen Kaahumanu Hwy	3.2	2.8	3.5
Police Access Road at Queen Kaahumanu Hwy	-	2.0	2.4
Makala Blvd at Queen Kaahumanu Hwy	3.4	2.2	2.5

Hawaii State AAQS: 5
National AAQS: 10

Appendix E

Flora Survey Report

By Robert W. Hobdy,
Environmental Consultant

FLORA SURVEY REPORT

for the

KONA KAI OLA AT KEALAKEHE PROJECT

KEALAKEHE, KONA, HAWAI'I

by

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February 2006

Prepared for:
Oceanit Laboratories, Inc.

FLORA SURVEY REPORT
for the
Kona Kai Ola at Kealakehe Project

INTRODUCTION

The Kona Kai Ola at Kealakehe Project lies on approximately 548 acres of land in lower Kealakehe, North Kona, Hawaii three miles north of Kailua town. The property is bounded on the north by Honokohau Small Boat Harbor, on the east by Queen Ka'ahumanu Highway, on the south by Kealakehe Wastewater Treatment Plant and undeveloped land and on the west by the Pacific Ocean.

SITE DESCRIPTION

The property area is a broad coastal lava plain consisting primarily of pahoehoe lavas that are sparsely broken up by low ridges and escarpments and a few collapsed lava tubes but is mostly a smooth hard surface (Sato et al, 1973). The coastline is entirely jagged black lava, but with a thin strip of accumulated sand and coral that has been cast up high onto the lava shelf by west swell storms. Elevations range from sea level to just over 100 feet along the Highway. Rainfall averages 20 – 30 inches per year with the bulk falling between November and March (Armstrong, 1983). Soil is virtually non-existent with the exception of a few pockets of cinder.

SURVEY OBJECTIVES

This report summarizes the findings of a flora survey of the Kona Kai Ola at Kealakehe Project which was conducted in February 2006. The objectives of the survey were to:

1. Document what plant species occur on the property.
2. Document the status and abundance of each species.
3. Determine the presence of any native flora particularly any that are Federally listed as Threatened or Endangered (USFWS, 1999). If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora in this part of the island.

SURVEY METHODS

A walk-through botanical survey was conducted consisting of several long transects designed to cover all parts of the property and habitats. Approximately 8 miles of transects were traversed. The coastal zone was most intensively examined as it contained the highest percentage of native species. Notes were made on plant species, status and abundance.

DESCRIPTION OF THE VEGETATION

The vegetation on this large property consists of hardy dryland grasses and shrubs with only a very few scattered trees. The most abundant species by far is fountain grass (*Pennisetum setaceum*). Also common are 'uhaloa (*Waltheria indica*), Natal redtop (*Melinis repens*), koa haole (*Leucaena leucocephala*), mai'a pilo (*Capparis sandwichiana*) and klu (*Acacia farnesiana*). Vegetation is sparse over much of this hard lava substrate but slightly denser toward the upper part of the property. The greatest concentration of native plants was found along the coastal strip in the unusual habitat of upcast sand and coral deposited on the lava.

DISCUSSION AND CONLUSIONS

A total of 42 plant species were observed on this large property. Of these a handful mostly non-natives, dominate the area. Three species are endemic to Hawaii: hinahina (*Heliotropium anomalum* var. *agrenteum*), pā'ū o Hi'iaka (*Jacquemontia ovalifolia* subsp. *sandwicensis*) and mai'a pilo. An additional nine species are indigenous to Hawaii as well as other Pacific islands: mau'u'aki'aki (*Fimbristylis cymosa*), 'akulikuli (*Sesuvium portulacastrum*), koali awahia (*Ipomoea indica*), pōhuehue (*Ipomoea pes-caprae*), naupaka kahakai (*Scaevola taccada*), 'ilima (*Sida fallax*), alahe'e (*Psydrax odorata*) and 'uhaloa. Three species are Polynesian introductions, brought here during the course of their migrations: niu (*Cocos nucifera*), milo (*Thespesia populnea*) and noni (*Morinda citrifolia*). The remaining twenty seven species are non-native plants.

No Federally listed Endangered or Threatened plants (USFWS, 1999) were found on the property, nor were any that are candidates for such status identified. Most of the area is dominated by an unremarkable array of grasses and weeds interspersed with a few common native species.

The coastal strip, however, qualifies as a special habitat worthy of protection for the assemblage of native species that predominate there. This strip, never more than 300 feet wide, consists of upcast sand and coral that overlays a jagged and scenic lava landscape

and extends from just south of the Honokohau Small Boat Harbor, past Noio Point, to the property boundary at Kaiwi Point. Nine species of native plants grow here, the most outstanding of which is the silvery hinahina which is culturally important as lei material. This coastal strip also is important for community fishing access. It is recommended that this area be left as is for two reasons. The first is that it cannot be realistically improved upon and the second is that it would be foolish to do so because of the fact that it is periodically inundated by powerful surf.

For the remainder of the property there is little of botanical concern, and the proposed changes should have little significant negative impact on the botanical resources in this part of Kona.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within four groups: Ferns, Gymnosperms, Monocots and Dicots. Taxonomy and nomenclature of the Monocots and Dicots are in accordance with Wagner et al. (1999) and Staples & Herbst (2005).

For each species, the following information is provided:

1. Scientific name with author citation

2. Common English or Hawaiian name.

3. Bio-geographical status. The following symbols are used:
   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   Polynesian introduction = plants introduced to Hawai'i in the course of Polynesian migrations and prior to western contact.
   non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:
   abundant = forming a major part of the vegetation within the project area.
   common = widely scattered throughout the area or locally abundant within a portion of it.
   uncommon = scattered sparsely throughout the area or occurring in a few small patches.
   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
FERNS			
NEPHROLEPIDACEAE (Sword Fern Family)			
Nephrolepis multiflora	sword fern	non-native	rare
THELYPTERIDACEAE (Marsh Fern Family)			
Christella parasitica	----------	non-native	rare
MONOCOTS			
ARECACEAE (Palm Family)			
Cocos nucifera L.	niu	Polynesian	rare
CYPERACEAE (Sedge Family)			
Bulbostylis capillaris (L.) C.B. Clarke	----------	non-native	uncommon
Fimbristylis cymosa R. Br.	mau'u 'aki'aki	indigenous	uncommon
POACEAE (Grass Family)			
Melinis repens (Willd.) Zizka	Natal redtop	non-native	common
Pennisetum setaceum (Forssk.) Chiov.	fountain grass	non-native	abundant
DICOTS			
AIZOACEAE (Fig-marigold Family)			
Sesuvium portulacastrum (L.) L.	'akulikuli	indigenous	rare
ANACARDIACEAE (Mango Family)			
Schinus terebinthifolius Raddi	Christmas berry	non-native	uncommon
ASTERACEAE (Sunflower Family)			
Pluchea carolinensis (Jacq.) G. Don	sourbush	non-native	uncommon
Tridax procumbens L.	coat buttons	non-native	rare
BATACEAE (Saltwort Family)			
Batis maritima L.	pickleweed	non-native	rare
BORAGINACEAE (Borage Family)			
SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Heliotropium anomalum Hook. & Arnott	hinahina	endemic	rare

var. argenteum A. Gray			
Tournefortia argentea L. fil.	tree heliotrope	non-native	rare
CACTACEAE (Cactus Family)			
Opuntia ficus-indica (L.) Mill.	panini	non-native	rare
CAPPARACEAE (Caper Family)			
Capparis sanwichiana DC.	mai'a pilo	endemic	common
CASUARINACEAE (She-oak Family)			
Casuarina equisetifolia L.	common ironwood	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea indica (J. Burm.) Merr.	koali awahia	indigenous	rare
Ipomoea pes-caprae (L.) R. Br.	pohuehue	indigenous	rare
Jacquemontia ovalifolia (Choisy) H. Hallier subsp. sandwicensis (A.Gray) K.Robertson	pa'u o Hi'iaka	endemic	rare
CRASSULACEAE (Orpine Family)			
Kalanchoe tubiflora (Harv.) Raym.-Hamet	chandelier plant	non-native	rare
CUCURBITACEAE (Gourd Family)			
Coccinea grandis (L.) Voigt	ivy gourd	non-native	rare
FABACEAE (Pea Family)			
Acacia farnesiana (L.) Willd.	klu	non-native	common
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	rare
Indigofera suffruticosa Mill.	*iniko*	non-native	rare
Leucaena leucocephala (Lam.) deWit	*koa haole*	non-native	common
Pithecellobium dulce (Roxb.) Benth.	'opiuma	non-native	rare
Prosopis pallida (Humb.&Bonpl.Ex.Willd.) Kunth	*kiawe*	non-native	uncommon
GOODENIACEAE (Goodenia Family)			
SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Scaevola taccada (Gaertn.) Roxb.	naupaka kahakai	indigenous	rare

MALVACEAE (Mallow Family)			
Sida fallax Walp.	'ilima	indigenous	rare
Thespesia populnea (L.) Sol. ex Correa	milo	Polynesian	rare
MORACEAE (Mulberry Family)			
Ficus microcarpa L. fil.	Chinese banyan	non-native	rare
MYRTACEAE (Myrtle Family)			
Psidium guajava L.	guava	non-native	rare
NYCTAGINACEAE (Four - o'clock Family)			
Boerhavia coccinea Mill	----------	non-native	rare
Boerhavia repens L.	alena	indigenous	rare
PORTULACACEAE (Purslane Family)			
Portulaca oleracea L.	pigweed	non-native	rare
Talinum triangulare (Jacq.) Willd.	----------	non-native	rare
RHIZOPHORACEAE (Mangrove Family)			
Rhizophora mangle L.	red mangrove	non-native	rare
RUBIACEAE (Coffee Family)			
Morinda citrifolia L.	noni	Polynesian	uncommon
Psydrax odorata (G. Forst.) A.C. Smith & S.Darwin	alahe'e	indigenous	rare
STERCULIACEAE (Cacao Family)			
Waltheria indica L.	'uhaloa	indigenous	abundant
VERBENEACEAE (Verbena Family)			
Lantana camara L.	lantana	non-native	rare

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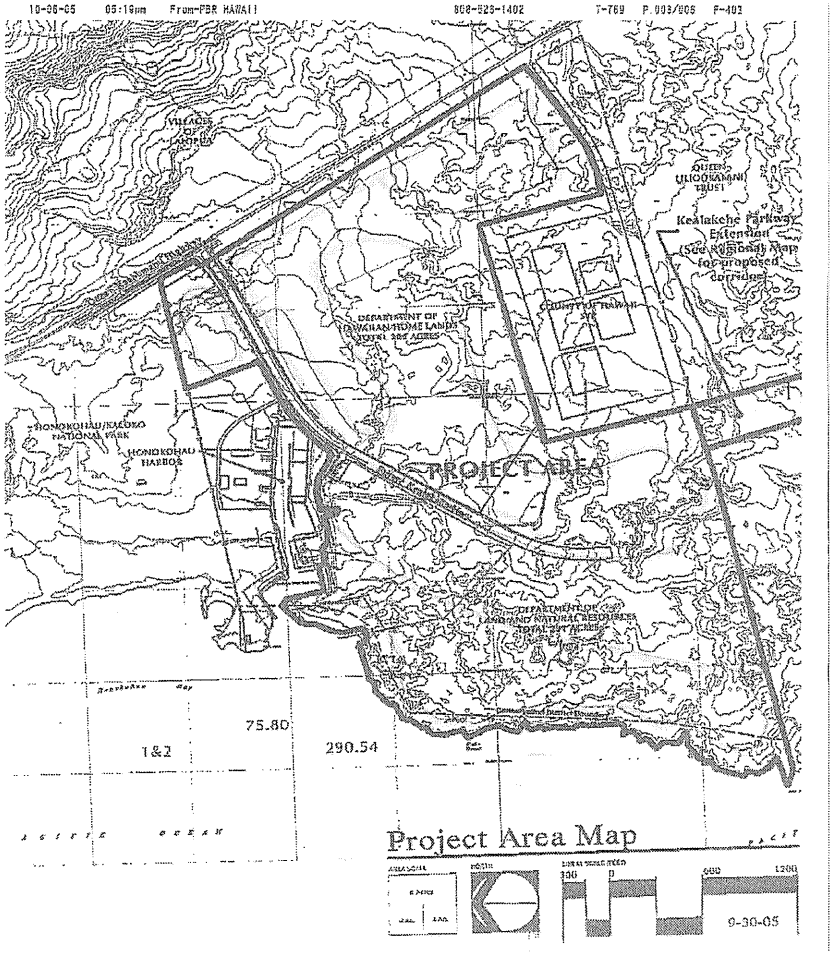

Yellow highlight represents the transects followed during the survey work.

Appendix F

A Survey of Avian and Terrestrial Mammalian Species

By Reginald E. David,
Rana Productions, Ltd.

A Survey of Avian and Terrestrial Mammalian Species, Kona Kai Ola at Kealakehe, lands of KeahouLū, North Kona District, Island of Hawai'i.

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February 9, 2006

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Introduction

Jacoby Development, Inc. is proposing to develop a mixed urban and commercial development on approximately 548-acres of land located in Kealakehe Homesteads, North Kona District, Island of Hawaii (Figure 1). The development will be located on 200-acres at Honokōhau, leased from the Department of Hawaiian Home Lands (DHHL), and on an adjacent 348-acre parcel which is currently under the jurisdiction of the Department of Land and Natural Resources (DLNR). The currently envisioned plan includes the development of an expanded marina, additional marina commercial space, retail commercial space, as well as a resort/timeshare facility.

The primary purpose of the survey was to determine if there were any avian or mammalian species currently listed as endangered, threatened, or proposed for listing under either the federal or the State of Hawai'i's endangered species programs on, or within in the immediate vicinity of the proposed development site. Federal and State of Hawai'i listed species status follows species identified in the following referenced documents (DLNR 1998, Federal Register 1999a, 1999b, 2001, 2002, 2004, 2005). Fieldwork was conducted between February 5 and 7, 2006.

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 46th supplements to *Check-list of North American Birds* (American Ornithologists' Union 2000; Banks et al. 2002, 2003, 2004, 2005). 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). Place names follow *Place Names of Hawaii* (Pukui et al. 1976).

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 on Page 13.

General Site Description

The project site encompasses approximately 550-acres located in the Kealakehe Homestead *ahupua'a*, in the North Kona District, on the Island of Hawai'i. The project site is bound to the east by Queen Ka'ahumanu Highway, to the west by the ocean, and to the north by the existing Honokōhau small boat harbor and associated infrastructure, and by the southern boundary of the Kaloko Honokōhau National Historical Park. The southern boundary of the parcel is formed by the northern boundary of the KeahuoLū *ahupua'a*. The Kealakehe wastewater treatment plant is excluded from the project site (Figure 1).

The site slopes gently from east to west, from a maximum elevation of approximately 85-feet above mean sea level in the southeastern corner of the site, down to a few feet above sea level along the shoreline (Figure 1). The terrain is composed predominately of

pāhoehoe and lava flows formed during the Holocene and Pleistocene ages. The majority of the site is covered with flows formed between 1,500 - 3,000 years ago, although a small portion of two older *'a'ā* flows, formed between 3,000 – 5,000 and between 5,000 - 10,000 years ago respectively, are visible in the northeastern corner of the site (Wolfe and Morris 1996, USGS 1996).

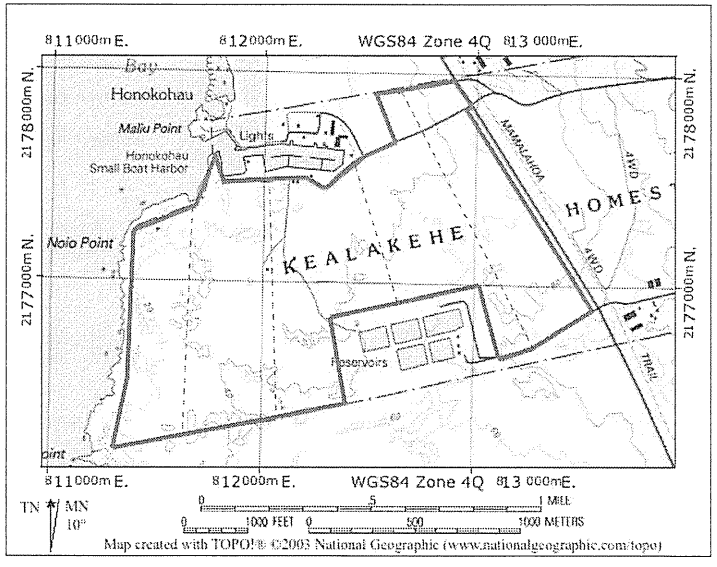
Areas in the northwest corner of the site have been bulldozed and compacted, and the Department of Transportation is currently in the process of widening Queen Ka'aumanu Highway along the eastern boundary of the subject property. The bulk of the DHHL parcel is relatively undisturbed. Within the western section of property which is currently under the jurisdiction of the DLNR, there are two large sheds, numerous dump sites containing a mix of abandoned equipment, including boat trailers, boats, various vehicles and other assorted detritus. Within the DLNR section there are also a number of unpaved roads crisscrossing the site. There are two very large areas of piled rock within this section, which were likely the result of blasting and dredging activities associated with the excavation and construction of both the Honokōhau small boat harbor and the Kealakehe wastewater treatment plant.

The vegetation within the project site can be best characterized as a Fountain Grass Grassland subtype of the Lowland Dry Grassland Community. (Gagne and Cuddihy 1990). The vegetation present, is dominated by fountain grass (*Pennisetum setaceum*), with a mix other predominantly alien plants including, *koa haole* (*Leucaena leucocephala*), *kiawe* (*Prosopis pallida*), *klu* (*Acacia farnesiana*), Indian mulberry (*Morinda citrifolia*), Christmas berry (*Schinus terebinthifolius*), and *koko kahiki* (*Chamaesyce hirta*), dotted across the landscape. The vegetation is dominated by alien species, almost to the exclusion of native species. There is however, at least one endemic species, *maiapilo* (*Capparis sandwichiana*) and one indigenous species *'uhaloa* (*Waltheria indica*) present on the site. *'uhaloa* is very common, whereas *maiapilo* occurs in low densities, usually concentrated in depressions and collapsed lava blisters and tubes.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'ōpe'ape'a* as it is known locally, all terrestrial mammals currently found on the Island of 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. Visual and electronic scans, using a Broadband AnaBat II® ultrasonic bat detector, were made for bats during crepuscular periods on the evenings of February 5 and 6, 2006, and on the mornings of February 6 and 7, 2006.

Figure 1
Kona Kai Ola Project Site



Mammalian Survey Results

We detected three mammalian species during the course of this survey. Three apparently, feral dogs (*Canis f. familiaris*) were encountered in thick vegetation on the southwest corner of the site, just behind the high-tide line. Several other dogs were seen in the company of humans at several locations within the site. One small Indian mongoose (*Herpestes a. auropunctatus*) was seen close to a dumpster near the northwest corner of the site close to the Honokōhau small boat harbor. Sign and scat of dogs, mongoose and cats (*Felis catus*) was encountered in numerous locations within the site. All mammals recorded are considered to be alien to the Hawaiian Islands. Hawai'i's sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, was not detected during the course of this survey.

Avian Survey Methods

Thirteen avian count stations were sited along four linear transects running north to south across the property. Count stations were sited at approximately 300-meter intervals equally spaced along these transects (Figure 1). Six-minute point counts were made at each of the 13-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 07:00 a.m. and 11:00 a.m., the peak of daily bird activity.

An additional two hours were spent within the project area on the evenings of February 5 and 6, 2006, and on the mornings of February 6 and 7, 2006, in an attempt to detect nocturnally flying seabirds over-flying the project area. Additionally, the shoreline within the subject property was walked, and areas behind the high-tide line were inspected to see if any waterbird habitat is present on the site. Time not spent counting was used to search the remainder of the project site for species and habitats that were not detected during count sessions or the shoreline inspection.

Avian Survey Results

A total of 183 individual birds of 18 different species, representing 13 separate families, were recorded during station counts (Table 1). An additional two species, Black-necked Stilt (*Himantopus mexicanus knudseni*), and Ruddy Turnstone (*Arenaria interpres*) were recorded as incidental observations while transiting the study area between count stations. The Hawaiian endemic sub-species of the Black-necked Stilt is listed as an endangered species under both Federal and State of Hawai'i endangered species statutes (DLNR 1998, Federal Register 1999). One species detected, Black-crowned Night-Heron (*Nycticorax nycticorax hoactli*), is an indigenous resident breeding species. Three species, Pacific Golden-Plover (*Pluvialis fulva*), Wandering Tattler (*Heteroscelus incanus*) and Ruddy Turnstone are indigenous migratory species. The remaining 15 species deteced are alien to the Hawaiian Islands.

Avian diversity and densities were extremely low, not surprising given the xeric nature of the habitat present on the site. Two species, Zebra Dove (*Geopilia striata*), and House Finch (*Carpodacus mexicanus frontalis*), accounted for slightly less than 46% of the total number of birds recorded during station counts. The most common avian species recorded was Zebra Dove, which accounted for 27% of the total number of individual birds recorded. An average of 14 individual birds were recorded per station count.

Table 1

Avian Species Detected, Kona Kai Ola Project Site

Common Name	*Scientific Name*	*ST*	*RA*
	GALLIFORMES		
	PHASIANIDAE - Pheasants & Partridges		
	Phasianinae - Pheasants & Allies		
Gray Francolin	*Francolinus pondicerianus*	A	1.00
Black Francolin	*Francolinus francolinus*	A	0.77
	CICONIIFORMES		
	ARDEIDAE - Herons, Bitterns & Allies		
Black-crowned Night-Heron	*Nycticorax nycticorax hoactli*	IR	0.15
	CHARADRIIFORMES		
	CHARADRIIDAE - Lapwings & Plovers		
	Charadriinae - Plovers		
Pacific Golden-Plover	*Pluvialis fulva*	IM	I-3
	RECURVIROSTRIDAE - Stilts & Acocets		
Black-necked Stilt	*Himantopus mexicanus knudseni*	EE	I-2
	SCOLOPACIDAE - Sandpipers, Phalaropes & Allies		
	Scolopacinae - Sandpipers & Allies		
Wandering Tattler	*Heteroscelus incanus*	IM	0.08
Ruddy Turnstone	*Arenaria interpres*	IM	I-1
	COLUMBIFORMES		
	COLUMBIDAE - Pigeons & Doves		
Spotted Dove	*Streptopelia chinensis*	A	0.54
Zebra Dove	*Geopelia striata*	A	3.77
	PASSERIFORMES		
	ZOSTEROPIDAE - White-Eyes		
Japanese White-eye	*Zosterops japonicus*	A	0.31
	MIMIDAE -Mockingbirds & Thrushes		
Northern Mockingbird	*Mimus polyglottos*	A	0.08
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	1.23
	EMBERIZIDAE - Emberizids		
Saffron Finch	*Sicalis flaveola*	A	1.59
Yellow-billed Cardinal	*Paroaria capitata*	A	0.12

	CARDINALIDAE - Cardinals Saltators & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	0.31
	FRINGILLIDAE - Fringilline And Cardueline Finches & Allies		
	Carduelinae - Carduline Finches & Allies		
House Finch	*Carpodacus mexicanus*	A	2.69
Yellow-fronted Canary	*Serinus mozambicus*	A	0.15
	PASSERIDAE - Old World Sparrows		
House Sparrow	*Passer domesticus*	A	0.31
	ESTRILDIDAE - Estrildid Finches		
	Estrildinae - Estrildine Finches		
African Silverbill	Lonchura cantans	A	0.46
Nutmeg Mannikin	Lonchura punctulata	A	0.46
Java Sparrow	Padda oryzivora	A	1.46

KEY TO TABLE 1

ST	Status
A	Alien Species
EE	Endangered Endemic Species or Sub-species
IM	Indigenous Migratory Species
RA	Relative Abundance: Number of birds detected divided by the number of count stations (13)
I	Incidental observation followed by the number of individuals recorded

Discussion

Mammalian Resources

The findings of the mammalian survey are consistent with at least one other faunal survey conducted on a portion of the subject property (David 2001), as well as with other surveys conducted within the lowland, fountain grass dominated areas in North Kona, within the recent past (David 1999, 2000a, 2000b, 2003, 2004a 2004b, Guinther et al. 2005).

Although, not detected during the course of this survey it is likely that Hawaiian hoary bats over-fly the site occasionally, as they have been seen in numerous lowland areas in North Kona, including the Kalakehe Wastewater Treatment Plant and the Honokōhau small boat harbor on a seasonal basis (David 1993, 2005, Jacobs 1994). The site has little to offer a passing bat, as it lacks the vegetation suitable for roosting, and given its xeric nature, it probably does not support the densities of volant insects that this species prey on.

Unlike nocturnally flying seabirds, which often collide with man-made structures, bats are uniquely adapted to avoid collision with most obstacles, man-made or natural. They navigate and locate their prey primarily by using ultrasonic echolocation, which is sensitive enough to allow them to locate and capture small volant insects at night.

Although no rodents were detected during the course of this survey, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*), and possibly Polynesian rats (*Rattus exulans hawaiiensis*) utilize various resources found within the project site. Without conducting a trapping program, it is difficult to assess the population densities of these often hard-to-see alien mammals.

Avian Resources

Avian diversity and densities were in keeping with the habitat present within the project area. The findings of the avian survey are consistent with at least one other avian survey conducted on a portion of the subject property (David 2001), as well as with other surveys conducted within the lowland, fountain grass dominated areas in North Kona, within the recent past (David 1999, 2000a, 2000b, 2003, 2004a 2004b, Guinther et al. 2005).

A total of 20 avian species were detected during the course of this survey (Table 1). Two of these, Black-necked Stilt, and Black-crowned Night-Heron are resident endemic, and indigenous species respectively, and three, Pacific Golden-Plover, Wandering Tattler, and Ruddy Turnstone are indigenous migratory species that nest in the high Arctic, returning to Hawai'i and the tropical Pacific in the fall each year to spend the winter months. The remaining 15-species are alien to the Hawaiian Islands. Two species, Zebra Dove, and House Finch, accounted for slightly less than half of the total number of individual birds recorded during station counts.

The habitat currently found within the project site does not provide the resources necessary for the sustenance, or nesting of native avian species. This is not so of the Kealakehe wastewater treatment plant located along the southern boundary of the property. Since it's opening in March of 1994, the ponds within this facility have concentrated the majority of waterbirds along the Kona coast. Currently the bulk of the islands populations of two endemic endangered waterbirds, Black-necked Stilt, and Hawaiian Coot (*Fulica alai*), utilize resources within this facility. The 2 stilts recorded during the course of this survey were detected flying over the project site, they were seen coming from the plant, flying north, presumably heading for the intertidal zone and 'Aimakapā Pond located in the Kaloko Honokōhau National Historical Park located just north of the northern boundary of the project site. The wastewater plant also hosts many of the more than 80 species of migratory and extralimital avian species which have been recorded from Hawai'i and which have been recorded from coastal areas in North Kona (Pyle 2002, Engilis et al. 2004).

It is likely that following the development of the site, and the installation of irrigated landscaping, that many of the commonly occurring alien species currently found in North

Kona will be recorded on the site. If lawns, parking lots and other open areas are created it is likely that these features will also attract a number of migratory shorebirds between the months of August and May each year.

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 (*Puffinus auricularis newelli*), over-fly the project area between the months of May and November (Banko 1980a, 1980b, Day et al. 2003a, Harrison 1990).

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 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 (USFWS 1983, Simons and Hodges 1998, Ainley et al. 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961, Telfer 1979, Sincock 1981, Reed et al. 1985, Telfer et al. 1987, Cooper and Day 1998, Podolsky et al. 1998, Ainley et al. 2001). There is no suitable nesting habitat within the project area for either of these pelagic seabird species.

Potential Impacts to Protected Vertebrate Species

Hawaiian Petrel and Newell's Shearwater

The principal potential impact that development of the Kona Kai Ola property poses to Hawaiian Petrels and Newell's Shearwaters is the increased threat that birds will be

downed after becoming disoriented by exterior lighting associated with the various businesses and marina operation.

Conclusions

It is not expected that the development of the proposed Kona Kai Ola property will have significant impacts to native avian or mammalian resources present within the North Kona District.

Recommendations

To reduce the potential for interactions between nocturnally flying Hawaiian Petrels and Newell's Shearwaters with external lights and man-made structures, it is recommended that any external lighting planned in conjunction with the development be shielded (Reed et al. 1985, Telfer et al. 1987). This mitigation 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.

Glossary:

'A'ā – Clinker lava formed by slow moving lava flows
Ahupua'a – Traditional Hawaiian land division, usually extending from the uplands to the sea.
Alien – Introduced to Hawai'i by humans
Crepuscular – Twilight hours
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended as an endangered species.
Endemic – Native and unique to the Hawaiian Islands
Extralimital – A species that is found outside of its normal breeding or migratory areas
Feral – Wild untamed animals
Incidental observation – A species not counted during station counts, but seen within the project area
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
Nocturnal – Night-time, after dark
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
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.

DHHL – Hawaii State Department of Hawaiian Home Lands
DLNR – Hawaii State Department of Land & Natural Resources
ESA – Endangered Species Act of 1973, as amended

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Appendix G-1

Geology and Ground-Water Hydrology in the Vicinity of Honokohau Harbor

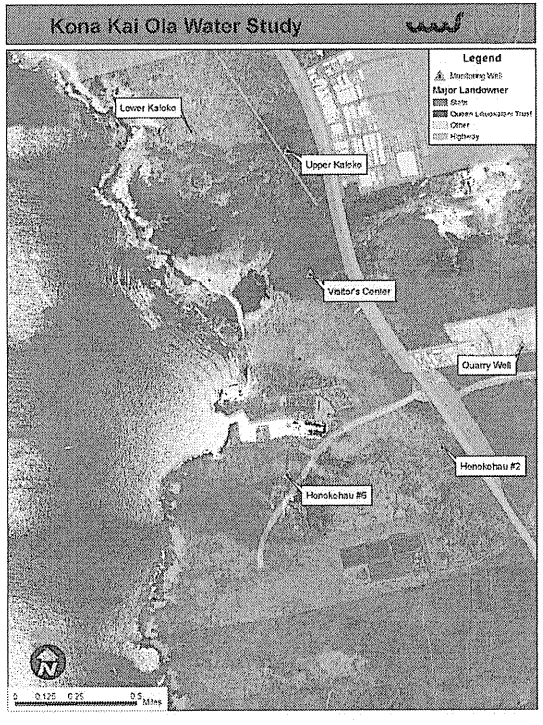
By Waimea Water Services, Inc., and Mink and Yuen, Inc.

Geology and Ground-Water Hydrology in the Vicinity of Honokohau Harbor
A Field Study by Waimea Water Services. Inc.
Assisted by Mink and Yuen, Inc.
October, 2006

Introduction

A field hydrology study was conducted for the purpose of determining the ground-water regime in the immediate vicinity of Honokohau Harbor and specifically, to document the existing ground-water behavior in the area associated with the proposed Kona Kai Ola Marina expansion to the south of Honokohau.

As part of this and other activities, two observation well sites (# 2 and #6) were selected to provide data on water level and water quality for the proposed project. Additionally, three off site wells located in the nearby Kaloko-Honokohau National Park and one in the quarry located mauka of the project were included in the site study network.



However, before assessing the hydrological impacts it is important to understand the surficial and subsurface geology within the Kona Kai Ola project. The following discussion will focus on the geological conditions found in and around Honokohau Harbor.

Surface Geology

The lavas forming the area surrounding Kona Kai Ola and Honokohau Harbor were erupted from the Hualalai Volcano. The lava flows are of basaltic composition and form pahoehoe and aa lava flows within the flow units. See Figure 1. Hualalai is an active shield volcano that dominates the landscape in and around the Kailua-Kona region. The slope of the land near the Kona Kai Ola project is almost flat, dipping only 1.5 degrees. However, inland the flank of Hualalai becomes much steeper. The average slope above elevation 400 feet above mean sea level (ft., msl) is 7 degrees.

All of the lavas referred to above emanated primarily from the southwest flanks and upper southwest rift zone. Stearns and Macdonald (1946) referred to the Hualalai Volcanic Series; however, the stratigraphic nomenclature has been updated by Langenheim and Clague (1987) and renamed Hualalai Volcanics.

Recent geological mapping (Wolfe and Morris, 1996; Moore and Clague, 1991) has put the age of the pahoehoe lava flow surrounding the Honokohau area 5,000 to 10,000 years ago. This flow in turn is overlain by two pahoehoe and aa flow units that have been dated between 3,020± 150 years and 3,990± 70 years, respectively. Just south of the Honokau Harbor is a more recent pahoehoe and aa lava flow unit dated at 1,590± 100 years (Moore and Clague, 1991). The last eruption from Hualalai was in 1801 from the southwest rift zone at Kaupulehu (Stearns and Macdonald, 1946). Wright and others (1992) placed all of Hualalai within lava-flow hazard Zone 4. This zone is defined by the frequency of eruptions, which are lower than that of Kilauea and Mauna Loa. The amount of land covered by recent lava flows is much smaller. About 5 percent of land is covered by the 1801 eruption and 15 percent of land within the past 750 years.

Subsurface Geology

As discussed above, the surficial geology has been well mapped. Only recently has the subsurface geology been studied in greater detail due to the numerous water wells that have been drilled over the last 15 years, offshore submarine mapping by the USGS, and recent geophysical studies associated with groundwater exploration (Bauer, 2003).

The USGS has employed side-scan sonar to map large and distinct submarine landslides, slumps, and debris fields west of the South and North Kona coast. The offshore bathymetry shows very abrupt changes in depth that suggest faulting and tectonic adjustments within Hualalai Volcano and Mauna Loa.

As pointed out in Moore and others (1992) and Moore and Clague (1992), the North Kona Slump, a landside older than 130,000 years, left a large escarpment that was

covered over by more recent subaerial lava flows. Understanding the nature of the subsurface geology provides an insight into the occurrence of groundwater and the groundwater flow system within the Kona Kai Ola project area.

Ground-Water Occurrence

Ground water at the project site occurs as a thin basal brackish water lens. If ground water is fresh (<250 mg/L chloride concentration) then the Ghyben-Herzberg principle holds. That is, for every foot of water above sea level there is 40 feet of water below sea level. In a situation where the ground water is brackish, the ratio of 40:1 becomes more like 30:1. A salinity profile through Ooma test well (State Well No. 4262-01) about three miles north of the project site shows the 50 percent salinity at elevation –33± ft., msl (Waimea Water Services, 1996). Using the 30:1 ratio for the thin brackish lens condition would put the Ghyben-Herzberg water level at approximately 1.3± ft., msl. The average of 38 instantaneous measurements at this well is 1.63 ft., msl (Bauer, 2003). However, this well is influenced greatly by ocean tides.

The ocean tide response in basal wells along the Kona Coast cannot be ignored when measuring water levels. In another well, Kaloko Irrigation Well No. 2 (State Well No. 4759-02), located 12,000 feet inland from the coast showed tidal and barometric amplitudes of on the order of 0.3 ft., the maximum tidal cycle (0.5 days) being 0.33 ft. over a 62 day period from December 7, 1994 to February 6, 1995 (Bauer, 2003; Waimea Water Services, 1996). Oki and others (1999) measured water levels at Kaloko-Honokohau National Historical Park as part of a numerical groundwater model and found tidal fluctuations within the test wells on the order of 0.5 to 1.5 feet daily.

The transmission of the tidal signal to water wells hundreds to thousands of feet inland is an indication of the high hydraulic conductivity (K) within the dike-free flank lava flows that comprise the Honokohau region. Employing the tidal response in the Kaloko well, Bauer (2003) estimated the K value to be between 20,000 and 40,000 ft. per day (ft./d). Because estimating K values using tidal response in wells is burdened with uncertainties, the estimated value may be too high by an order of magnitude (Bauer, 2003). Kanehiro and Peterson (1977) used similar analyses and for wells north of the project site and calculated K values between 6,000± and 12,000± ft./d.

Oki (1999) and Oki and others (1999) used a K value of 7,500 ft/d for dike-free basaltic lava flows while numerical modeling the groundwater flow system of Kona and the groundwater resources of Honokohau National Historical Park, respectively. This value was picked as one that produced the smallest errors when groundwater heads were simulated.

The high hydraulic conductivities calculated from tidal response and aquifer tests cause the groundwater gradient to shift over time. In some instances may even reverse so that the higher water level may be seaward of the inland measuring points.

Background and Methods Specifically Related to the Hydrological Data Collection

A previous study (1996) by Waimea Water Services had been conducted to attempt to trace the fate treated secondary wastewater discharge in a sump located mauka of Queen Kaahumanu Highway. That study implied that there was serious mixing of the discharge water with the underlying brackish water in the basal lens. A number of studies have shown that there is no fresh (less than 250 milligrams per liter) basal ground-water found below elevation 1200' mauka of the project area. This fact is well documented in the various studies which have been conducted.

In order to provide accurate datum control, Wes Thomas Surveyors, Inc., were contacted to insure that network wells were found to be on a common base. Accordingly, wells #2, #6, Quarry and NPS Visitor Center wells were survey and the Visitor Center well were found to have a total datum base difference of .08' difference which was deemed to be adequate for the purpose of this study. It was assumed that the bench marks used at the NPS Lower Kaloko and Upper Kaloko wells were on a common datum with the Visitor Center well

Water quality sampling was performed on September 15, 2006 using a peristaltic pump via Teflon tubing and analyses were performed by Aecos Laboratory. Water levels were measured with an electric, calibrated tape and reel from Solinst, Inc. and recordings using Solinst battery powered sondes.

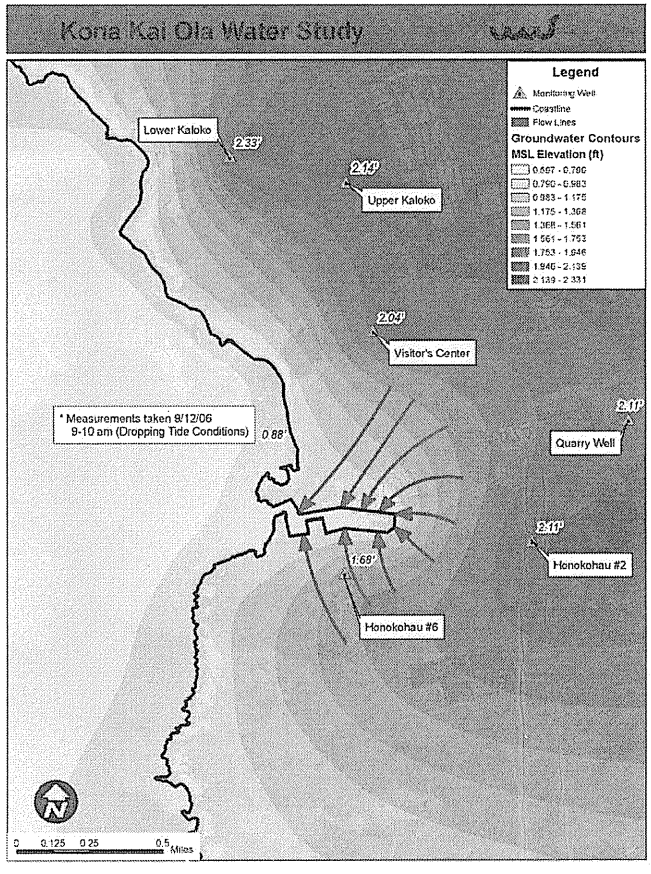
The water levels were continuously recording in the NPS wells during the period of study (September and October 2006) with data on the water level records furnished to WWS.

Ground-water Flow

The previous work by WWS in 1996 had implied that the ground-water flows might be minimal during high tide periods and accelerate at low tide. Additionally, the local recharge resulting from the wastewater discharge sump adds an average of about 1.4 mgd (personal communication – County Staff) the project area and its identity and fate, other than volume, remains a question. The ground-water quality throughout the study area is brackish and the apparent nutrient loading from the added effluent has not yet been in evidence as indicated during the sampling as evidence in Appendix A. Water Quality Data.

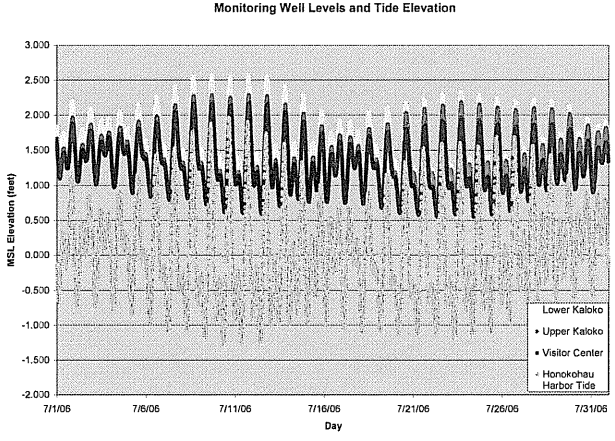
A low tide period was selected to conduct a rapid water level survey (20 minutes elapsed time) of the selected and new observation wells. Ground-water flow directions are normal to the contour lines as indicated by the flow vectors on the map. Ocean tides are in evidence in all of the wells as far inland as the Quarry well although the tidal transmission efficiency is reducing. Importantly, the existing Honokohau Harbor was acting as the drainage point at the time of the survey.

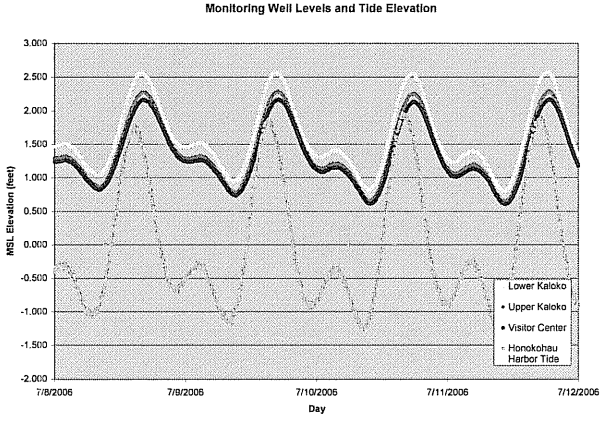
The ground-water flow direction survey clearly shows that some ground-water from within the National Park flows towards the harbor and that the flow direction from well #2 also is towards the harbor. The slope of the water table under these conditions appears to be about 2.5 feet/mile during the outgoing tide.



Ocean tides strongly influence both the ground-water flow and the water quality in the project area. The NPS maintains water level recorders on its three wells, Lower Kaloko,

Upper Kaloko and Visitor Center. A comparison of the ocean tides within the NPS network of three wells is shown below:

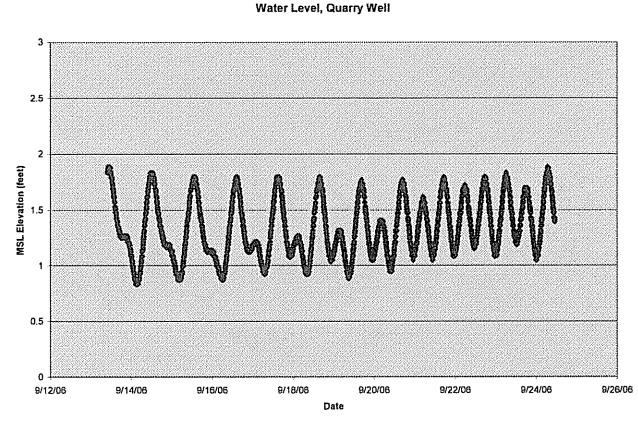


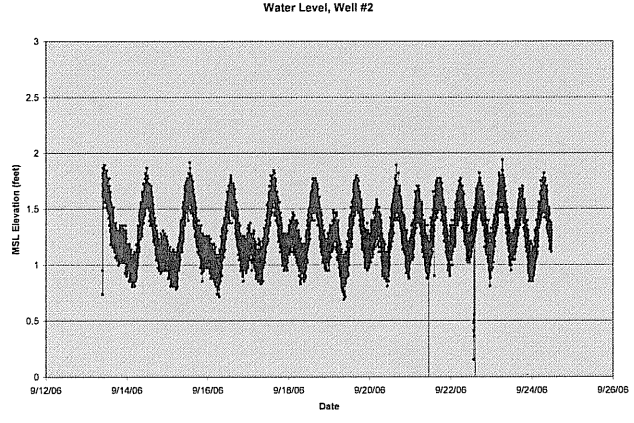


As is noted in the graph above, there a several moments when the ocean tides exceed the water table in the Lower Kaloko well, which may result in a no flow or very low flow

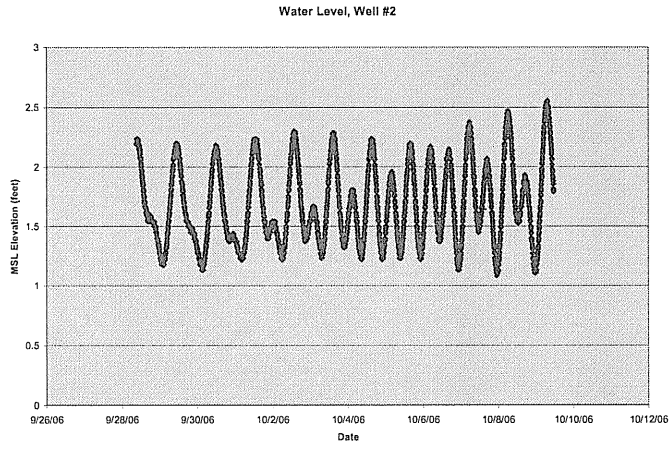
condition. This condition should result in a near shore mixing situation at the least and similar conditions can be expected around the perimeter of Honokohau Harbor.

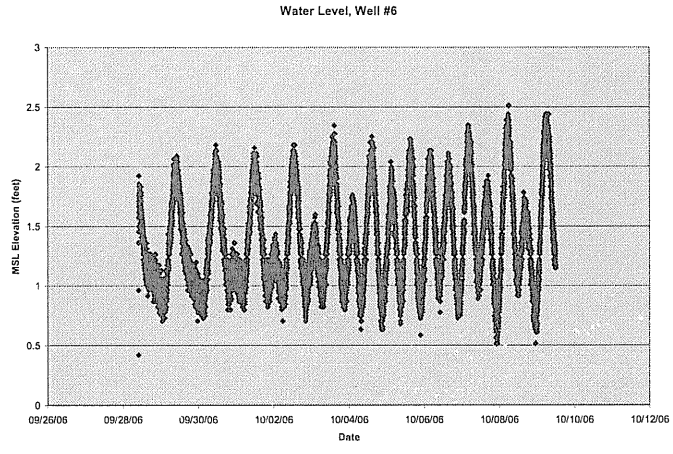
As part of this study, recorders were first placed on the Quarry well and observation well 2. Following a brief period of collection, a recorder was kept on well 2 and a recorder installed on well 6. Tides were also in evidence in Quarry well, well #2 and well #6.



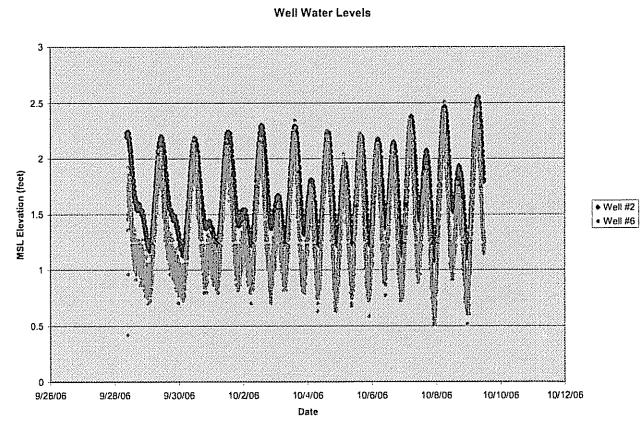


A second set of recordings below were made to establish the water fluctuations within the project boundaries as presented below:





In reviewing the relationship of the water levels between well #2 and #6, although the range of the water level in well #6 is greater, the high tide peaks appear to be identical in elevation suggesting a no flow condition. To better display this feature, the water levels are superimposed below.



Well # 6 is located in what will be the main channel of the proposed marina. Although there is some brackish water at present, the tidal efficiency is nearly 100% indicating that there would be very little change if the rock were absent. The rock at the surface of the water table is providing a slight impediment to the lateral flow of the ground-water.

The natural flow of the ground-water locally to the discharge points probably remains best estimated at about 1.5 to 4 mgd/mile of aquifer width. However, with the addition of the 1.4 mgd wastewater, the total flow is likely to be towards the upper number and the total flow will increase in time as more water is discharged to the sump. Using an average slope of 1/ft.m and Oki's K of 7500 ft/d, to flow to Harbor is probably better estimated at 3 to 4 mgd.

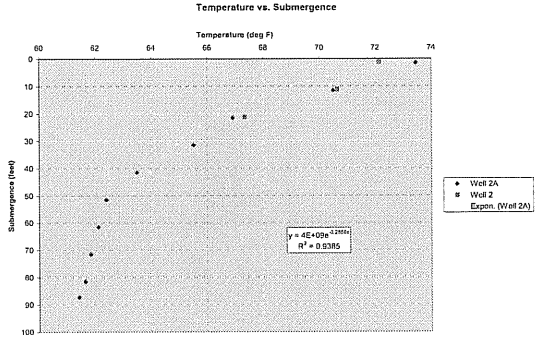
Water Quality and Temperature

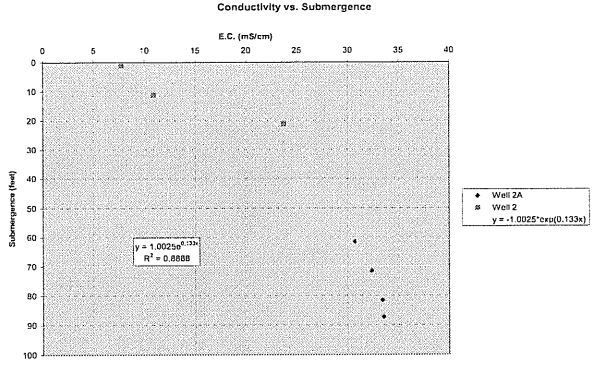
Water chemistry in the project area has been reported in the past as part of the WWS 1996 study of the discharge from the Keałakehe WWTP. Appendix B lists the sampling data collected during this field study. Specific conductance measurements were used as the primary indicator of the influence of ocean salts in the local ground-water. In addition, water quality (selected organic and inorganic compounds) samples were

collected from the Visitor Center, Quarry, Observation wells #2 and # 6 using a peristaltic pump to prevent any external contamination.

It has been known that there is a strong temperature influence in the ground-water between Keahole point to the north and Kaiwi to the south of the marina project. To better understand to near influence to the off shore trench on the inland lens, a well (2A) was drilled within about 10 feet of well #2, which had terminated in a black sand at a depth of about -30'. Well 2A was drilled through this upper sand of volcanic origin to an elevation of -50'where a solid casing was set. A smaller diameter was then drilled to elevation -88', where a mixture of calcareous and basaltic sand was struck preventing deeper drilling to the target depth of -100'.

A conductivity/temperature survey profile was conducted and a composite of the data from wells 2 and 2A is shown in the following graphs





The top most water has an average salinity of about 12% (EC= 5.0 milliS) in the upper 10'. By an elevation of -28', the salinity is already at 50% sea water and the temperature has dropped from 73.5 degrees F to 66 degrees. By an elevation of -85', the temperature had dropped about 61.5 degrees F. It is clear that the deep ocean influence extends some distance inland. Water quality at the bottom of 2A is about 70% sea water. Wells 2 and 2A are located about 0.5 miles inland of Honokohau Harbor and it is likely that at well 6, with a surface conductance of 27 milliS (more the 50% sea water) 100% sea water will be found at a shallow depth below sea level.

The water quality sampling program (Appendix A) revealed several interesting notes, namely; that the natural ground-water in the Quarry well (up gradient)contained a total nitrogen component of 1.20 mg/L while the WWTP discharge was 5.09 mg/L None of the down gradient sampling points indicated a concentration of N above 0.59 mg/L (well 6). While the WWTP discharge contained a total phosphous of 3.70 mg/L , well 2 had an elevated P 2.71 mg/L. Well 6 had a very attenuated P of 0.62 mg/L while the Harbor Spring P concentration was only 0.7mg/L, just slightly below 0.09 mg/L in NPS visitor Center well and the Quarry well (natural ground-water) of 0.12 mg/L. It can reasonably be concluded that, while the quantity of 1.4 mgd of effluent is being added to the ground-water flow, the impact from nutrient addition seems to be attenuated by the efficiency of tidal mixing. This estimated flow value does not consider matters related to layered and/or density driven flows in the groundwater system.

Conclusions

The recent field study has confirmed the strong influence of ocean tides within project area and the surrounding aquifer. The result is very brackish basal lens with no evidence of fresh water (250 mg chlorides) within a 3 to 4 mile radius. The Honokohau Harbor is the dominant drainage point with the ground-water flowing from the lands of the Kaloko-Honokohau National Park and from the vicinity of the Queen Kaahumanu Highway

Average ground-water discharge into the Honokohau Harbor is on the order of 3 to 4 mgd on the outgoing tide and may approach a no flow condition during the high tide peak. This estimated flow value does not consider matters related to layered and/or density driven flows in the groundwater system.
Cold, salty water is found at a very shallow depth within the ground-water regime and is decreasing in temperature with depth below sea level as evidenced in observation well 2A.

Nutrient additions of N and P from the Kealakehe WWTP are evidenced but reduced in well 2 and apparently not detectable in the Harbor Spring discharge. This appears to be related to tidal mixing.

APPENDIX A

Ground-water quality sample data
Prepared and analyzed by Aecos Laboratory

AECOS LABORATORY OF HAWAII, LLC
74-5602 Alapa Street, Suite 656 • Kailua-Kona, HI 96740
Telephone/Fax (808) 329-8411

WATER QUALITY RESULTS FOR KONA KAI OLA MONITORING WELLS

Analyte/(Unit)	Well 2	Well 6	Kealakehe WWTP	Quarry Well	NPS Well	Harbor Spring	Method	D.L
Temp/(C)	33.0	30.8	29.6	30.5	34.2	22.9	170.1	0.1
E. Cond/(mS/cm)	8.04	29.6	3.32	9.46	21.4	39.5	120.1	0.1
Salinity/(ppt)	4.4	18.4	1.7	5.3	12.8	25.1	SM	0.1
TN/(mg/L)	0.54	0.59	5.09	1.20	0.20	0.42	353.2	0.01
Nitrate+Nitrite (mg/L)	0.54	0.59	0.44	1.20	0.20	0.42	353.2	0.01
Ammonia(mg/L)	0.005	0.002	1.950	0.003	0.004	0.003	350	0.001
Total Phosphorus(mg/L)	2.71	0.62	3.70	0.12	0.09	0.07	365.4	0.01
Silica/(mg/L)	31.3	26.8	21.3	37.9	28.9	15.8	4500-Si	0.1
Arsenic/(mg/L)	0.007	0.029	0.002	0.008	0.021	0.043	200.8	0.002
Cadmium/(mg/L)	ND	ND	ND	ND	ND	ND	200.8	0.001

AECOS LABORATORY OF HAWAII, LLC
74-5602 Alapa Street, Suite 656 • Kailua-Kona, HI 96740
Telephone/Fax (808) 329-8411

WATER QUALITY RESULTS FOR KONA KAI OLA MONITORING WELLS

Kealakehe WWTP effluent, Well Bore # 6, NPS Well, Quarry Well, Bore #2 Well and the Honokohau Harbor Spring were monitored for EPA methods 602, 608, 625 and 8151A. The results for all wells was ND or Not Detected below indicated limit. Analytes for each method follow:

EPA Method 602 Purgeable Aromatics by GC
- Benzene
- Ethyl Benzene
- Toluene
- Xylene, M+P
- Xylene, O
- Xylene, Total

EPA Method 608- Chlorinated Pesticides
- 4,4-DDD
- 4,4-DDE
- 4,4-DDT
- Aldrin
- Alpha BHC
- Beta BHC
- Chlordane
- Delta BHC
- Dieldrin
- Endosulfan I
- Endosulfan II
- Endosulfan sulfate
- Endrin
- Endrin baldheaded
- Gamma BHC(Lindane)
- Heptachlor
- Heptachlor epoxide
- Methoxychlor
- PCB-1016
- PCB-1221
- PCB-1232
- PCB-1242
- PCB-1248
- PCB-1254
- PCB-1260
- Toxaphene

EPA Method 625 - BNA Extractables by GC/MS
- 1,2,4-Trichlorobenzence
- 1,2-Dichlorobenzene
- 1,2 Diphenylhydrazine
- 1,2-Dichlorobenzene
- 1,4-Dichlorobenzene
- 2,4,6-Trichlorobenzene
- 2,4 Dichlorophenol
- 2,4-Dimethylphenol
- 2,4-Dinitriphenol
- 2,4-Dinitrotoluene
- 2,6-Dinitrololuene
- 2-Chloronapthalene
- 2-Chlorophenol
- 2-Methyl-4,6-dinitrophenol
- 2-Nitrophenol
- 3,3-Dichlorobenzidine
- 4-Bromophenyl-phenylether
- 3-Chloro-3-methylphenol
- 4-Chlorophenyl-phenylether
- 4-Nitrophenyl
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzidine
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(g,h,i)fluoranthene
- Benzyl butyl phthalate
- bis(2-Chloroethoxy)methane
- bis(2-Chloroisopropyl)ether
- bis(2-Ethylhexyl)phthalate
- Chrysene
- Di-n-butylphthalate
- Di-n-octylphathalate

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EPA Method 625- BNA Extractables by GC/MS
- Dibenzo(a,h)anthracene
- Diethylphthalate
- Dimethyl phthalate
- Fluoroanthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachlorethane
- Indeno(1,2,3-cd)pyrene
- Isophorone
- N-Nitroso-di-n-polyamine
- N-Nitrosodimethylamine
- Naphthalene
- Nitrobenzene
- Pentachlorophenol
- Phenanthrene
- Phenol
- Pyrene

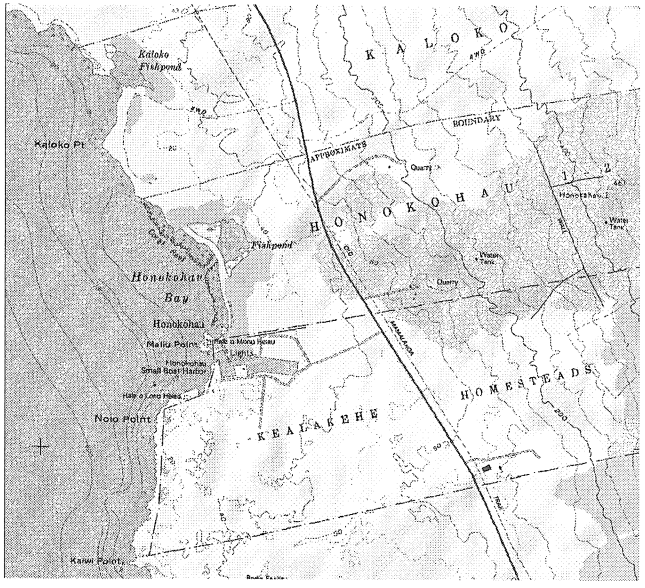
EPA Method - 8151A Phenoxy Acid Herbicides
- 2,4,5-T
- 2,4,5-TP(Silvex)
- 2,4-D
- 2,4-DB
- Dalapon
- Dicambra
- Dichloroprop
- Dinoseb
- MCPA
- MCPP

Appendix G-2

Evidence and Implications of Saline Cold Ground-Water

By Waimea Water Services, Inc.

Evidence and Implications of Saline Cold Ground-water, Honokohau, Hawai'i



By S.P. Bowles
June 2007

waimea water services inc.

P.O. Box 326, Kamuela, HI 96743
Phone (808) 885-5941 Fax (808) 885-7851
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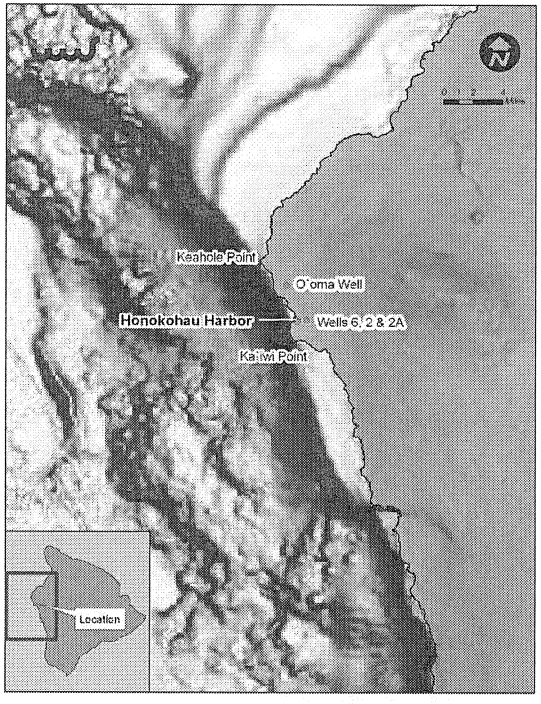
The purpose of this presentation is to outline the field evidence of the intrusion of cold saline waters beneath the brackish groundwater lens between Keahole Point and Ka'iwi Point near Honokohau Harbor (North Kona, Hawaii). It is clear from the field data that this intrusion has a major influence on the flow system associated with Honokohau Harbor and the proposed Kona Kai Ola Marina.

What is the evidence of this saline cold water influence? First and importantly, the shoreline lands between these two Points abut a pali, or steep underwater slope, which plunges rapidly to a depth of 5,000 feet within approximately 3 miles of the shore (see map below). It is well known that the Keahole Point complex pumps its water from these depths, at temperatures on the order of 45° F.



The evidence of the cold saline ground-water allows a unique insight into the influence of saline waters beneath the basal lens. This phenomena is rare in the Hawaiian Islands.

Several wells along the coast have been drilled to tap the shallow brackish water lens. Two wells, O'oma test well and KKO # 2& 2A (see location on map), have been drilled for the specific purpose of studying the thickness of the brackish lens and to develop salinity profiles. The O'oma test well was built in the early 1990's and was profiled by T.F. Nance. More recently in 2006, wells 2 and 2A on the map were profiled as part of the Kona Kai Ola Marina hydrology study.

Both wells clearly exhibit the reducing temperature with increasing salinity versus depth as shown in the following graphs.

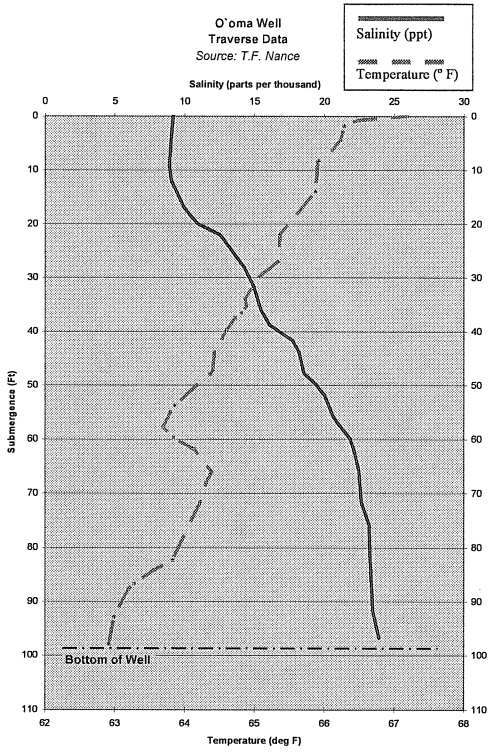


Figure 1. O'oma well traverse data, Salinity (ppt) versus Temperature (°F)

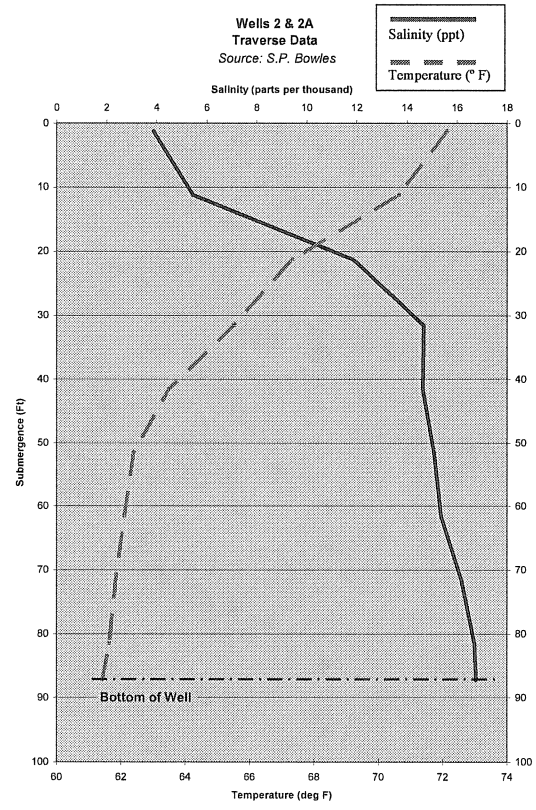


Figure 2. Wells 2 and 2A traverse data, Salinity (ppt) versus Temperature (°F)

In the mid 1960's, infrared airborne data collected around the Big Island by the US Geological Survey were published in Hydrologic Atlas, HA-218. The authors concluded that the infrared images at specific locations show fresh water discharge to the sea from both streams and basal lens springs. This now appears to be a misinterpretation in some instances. It is clear that the infrared imagery, collected then and in numerous studies since, are subject to a lack of ground truth. In many instances, particularly between

Keahole and Ka'iwi, a number of discharges are strongly influenced by the underlying cold saline waters.

From the depth profiles, it is clearly evident that the near shore deep waters facilitate very cold temperature in the salt water. This cold feature is coupled with highly permeable basalt lava interspersed with clinkers and lava tubes. Bauer (2003) documented the evidence of tide fluctuations and found a tidal efficiency of 30 percent in wells located 2 miles inland at nearby Kaloko. Studies performed in 2006 (WWS) for the Kula Kai Ola Marina showed a tidal efficiency of nearly 100% in bore #6 located within the proposed channel for the Marina. The fact that the transmission of tidal energy is seen 2 miles from the shoreline indicates that this high permeability extends far inland.

How does this energy function in the ground-water system? It has been inferred that the outflow of ground-water via Honokohau Harbor is on the order of 30 mgd (million gallons daily) (Moffatt and Nichols, 2006). However, the best estimates of basal lens flow from recharge to the fresh ground-water system is on the order of 3 to 4 mgd per mile width of shoreline by WWS (2006) and by earlier estimates of Oki (1999). Others have produced results on the same order of magnitude. Moffatt and Nichol (2006) provided extensive evidence and documentation of the Honokohau Harbor. They concluded, as others have, that an inflow of ground-water in excess of 20 mgd is needed to flush the Harbor in about 12 hours time.

There remains much to learn about how this cold saline water migrates inland to influence the fresh and brackish lens. Importantly, profiles of salinity have been made in Honokohau Harbor and the ground-water flow to sea has been estimated from 20 to 30 mgd. The harbor normally has clarity and is well balanced indicating a generally adequate flush without artificial energy input. The temperature component has been largely overlooked in favor of salinity in most studies.

The engine at work is the ocean tide. That is evident only because we can observe the presence of cold saline water. Normally, the lens is heated by the warm, shallow ocean temperatures as it flows to the sea. In the case of Honokohau Harbor, the surrounding natural system has been modified by the circulation of cold sea water inland. The man-made harbor excavation has created a shortcut for this water to escape on the outgoing tide. Alternately, the incoming tide not only drives the cold saline water inland but also upward to mix in the lens; it also drives warm salt water along the floor at the mouth of the Harbor. The brackish water flow of 3 to 4 mgd is a continuous average towards the sea. However, in the aquifer, the slope of the water table is decreased during the incoming tide and increased during the outgoing tide resulting in a variable brackish in-flow to the Harbor depending on the time of day.

Figures 3 and 4 illustrate the general condition of flows during high and low tide in a cross-section of the Honokohau Harbor.

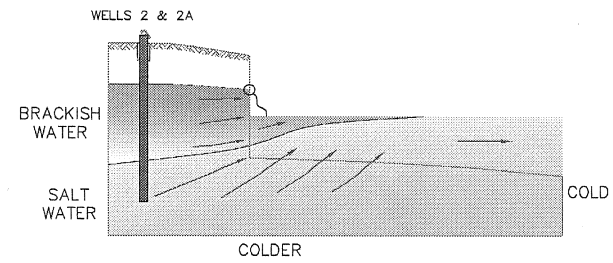


FIGURE 3 – LOW TIDE HARBOR FLOW CONDITION

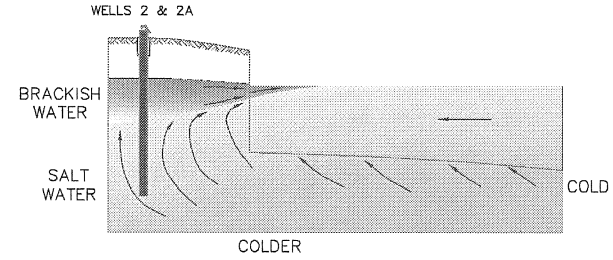


FIGURE 4 – HIGH TIDE HARBOR FLOW CONDITION

NOT TO SCALE
FOR DISCUSSION PURPOSES ONLY

There is more to understand about this phenomena but the general conclusion, based on the actual field model of Honokohau Harbor, is that the energy is driven inland on the rising tide expanding the transition zone. This energy head has a ready escape by driving the underlying expanded transition zone ground-water out to sea via the Harbor floor which produces a major water input to the harbor. This flow is independent of the normal flow of the upper brackish basal lens to the shoreline. It should be expected that the proposed marina would exhibit the same or similar flushing action on the outgoing tide which is separate from the fresh-brackish water portion of the ground-water system.

Additional saline flow could be added by drilling bore holes in the floor of the marina if needed. The most significant issue would be the influence of the cold saline water on the biota; however, this does not seem to be a problem in the floor of Honokohau Harbor.

Selected References

Bauer, G. (2003), A Study of the Ground-water Conditions in North and South Kohala Districts, Island of Hawaii, 1991-2002. Commission on Water Resource Management, PR 2003-01, State of Hawaii, 94 p.

Fischer,W.A., Davis, D. A., and Sousa, T.M. (1966), Fresh-water springs of Hawaii from infrared images: USGS Hydrologic Investigation Atlas HA-218

Moffatt and Nichols (2006), Hydrodynamic Model Development – Kona Kai Ola Marina (draft manuscript)

Moffat and Nichols (2007), Kona Kai Ola Marina Water Quality Modeling Study (draft manuscript)

Oki, D., Tribble, G., Souza, W., and E. Bolke (1999), Ground water resources in Kaloko National Historical Park, Island of Hawaii and numerical simulation of the effects of ground water withdrawals: USGS, Water Resources Investigation Report 99-4070

Waimea Water Services (2006), Geology and Ground-water Hydrology in the Vicinity of Honokohau Harbor (draft manuscript)

Appendix G-3

Ground-Water Effect on Anchialine Ponds

By Waimea Water Services, Inc.

waimea water services inc.

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June 14, 2007

To: Dayan Vithanage

From: Steve Bowles

Subject: Ground-water effect on anchialine ponds

I reviewed the two Kona Kai Ola studies (Ziemann, 2006; Chai, 2007) on anchialine ponds, as well as comments received in the DEIS process, and offer the following comments.

1. We must conclude that having the channel parallel to the shore will cut off some of the fresher ground-water flow. The shallow salinity is presently represented by bore hole 6 and the data from the anchialine pond studies. However, predicting the extent of change in flow is difficult if not impossible even with numerous boreholes and intense sampling. Regardless, the fact that the tidal measurements we made in bore hole 6 show that the tide fluctuations represent more than 90% in actual harbor tides. The fluctuations occur simultaneous with the ocean/harbor tides indicating a vertical and horizontal pressure regime between bore hole 6 and the ocean/harbor. The actual flow towards the sea is minimal today. The tides alone create a mixing system which degrades quality by increasing salinity, as the flow approaches the point of discharge which will be either the channel or the shore.

2. Recognizing that the channel will raise the salinity in the ponds, most of which are already degraded, should cause and introduce well-informed management practices such as cleaning, protection from human degradation and even importing some brackish water from an inland well if needed to supplement the local flows.

3. The increase in recharge from irrigation between the channel and shore will add fresh water to the lens locally. This component is not quantified today but it will have an influence on the waters reaching the ponds.

4. As indicated in the paper I prepared regarding the intrusion of cold saline waters, by dropping the water level to that of the ocean and providing a ready exit for the capture of the energy head, the channel will receive water from deep in the transition zone on the outgoing tide. The ground-water regime will be adjusted to recognize the channel walls as shoreline.

   I do not believe there is a practical way to predict or quantify this impact on flow to the anchialine ponds. The change in flow may even result in shallow waters moving in from the south.

5. The monitoring program recommended by Chai will facilitate the long term health of any of the anchialine ponds, both natural and manmade. Experience in management of anchialine ponds has demonstrated that maintaining or reconstruction is reasonable and practical.

6. As I stated in my paper "Evidence and Implications of Saline Cold Ground-water, Honokohau, Hawaii (June 2007),I recommended a more thorough study of the temperature regime in the Honokohau Harbor as being important data in understanding the input from the lower transitions zone.

Finally, the flow through each pond to the point of discharge is extremely difficult to even estimate. The shallow lavas are of the pahoehoe type and have a relatively high horizontal permeability. In surface depressions or undulations, the pahoehoe lavas have a tendency to lose vertical permeability from sedimentation thus restricting water exchange within the individual ponds. This is normally reflected in both the salinity and temperature and this information has been adequately studied in the ponds.

Appendix G-4

Supplemental Ground-Water Sampling & Analyses For Priority Pollutants

By Oceanit

Supplemental Ground Water Sampling and Analyses For Priority Pollutants

At Kona Kai Ola Development
Kona, Hawaii

For
Kona Kai Ola Development Corp

By
Oceanit Laboratories, Inc.

June 1, 2007

Introduction

Kona Kai Ola Development plans to expand the Honokohau Harbor, rehabilitate impacted anchialine ponds, and possibly utilize shallow brackish water resources for irrigation or surface landscape ponds. All of the above activities are based upon an assumption that the ground water resource is free of pollutants that could adversely impact planned uses. An in-house study conducted by the National Parks Service (NPS) within the Kaloko-Honokohau National Historical Park north and adjacent to the project site detected low levels of phenol in one of their shallow wells. As part of the geology and groundwater study for the Kona Kai Ola environmental impact statement, Waimea Water Services (WWS), assisted by AECOS Laboratory of Hawaii (Kona offices), obtained samples from the

- National Park well,
- Two on-site wells (2A & 6),
- Quarry well up-slope of the projects site,
- Kealakehe WWTP effluent inflow trench up-slope of the project site, and
- A ground water spring within the Honokohau Harbor

The above samples were tested (EPA methods 602, 608, 625, and 8151A) and found not to contain any detectible quantities of pollutants. However, due to limitations of the sampling logistics, it was not possible to obtain the above samples from all of these wells specifically from the surface of the wells during low tide when flow of fresh ground water from up-slope would be maximized. Concern about this possible oversight prompted project personnel to request a supplemental sampling effort to ensure the quality of groundwater beneath the project site. This report details the efforts to obtain and analyze samples for priority pollutants and discuss any implications from these findings.

Methods

Four wells were selected for sampling. Three of the wells, the two on-site wells (#2A, #6) and the Quarry well, up slope of the project site, were sampled during the previous study. A fourth well, at O‘oma, was selected as a control well just north of the site. The location of the four wells is shown in Figure 1, and the wells are characterized as follows:

Well #2A is located on the upper project site approximately 100 yards below (south) of Queen Kaahumanu Highway at a ground elevation of about 36-feet [19º 40.076' N 156º 0.860' W]. The well consists of a 2-inch PVC pipe extending 3.15-feet above ground with locking top and embedded in a 2-foot square concrete pad and extending below ground approximately 50-feet as a slotted pipe. This well is located approximately 12 feet south of well #2, a metal-cased 10-inch well, which was not sampled. This well represents the water quality at the upper portion of the property as it enters the site from up-slope areas.

Well #6 is located on a gravel road crossing the lower project site level with, and approximately 400 feet south of the center of the existing harbor at a ground elevation of about 29 feet [19º 40.076' N 156º 0.902' W] . The well consists of an open (un-capped) 2-inch PVC pipe extending 1.80 feet above a 2-foot square concrete slab. This well represents the water quality on the lower project site in the vicinity of the proposed harbor expansion.

The quarry well (referenced as well #1 in laboratory results) is located directly up-slope of the harbor, one half mile above Queen Kaahumanu Highway at an elevation of 130 feet at the southern corner of the old quarry, which is now used as a level industrial staging area [19º 40.436' N 156º 0.570' W]. The well consists of a 10-inch steel casing around a 6-inch PVC pipe which is covered with a heavy chained but un-locked well cap. This well represents the quality of groundwater up-slope of and probably flowing towards the project site

O‘oma well (referenced as well #3 in laboratory results) is located about two miles north of the project site at an elevation of 88-feet approximately 300 feet west of Queen Kaahumanu Highway, even with the 95-mile highway marker [19º 42.257' N 156º 1.952.' W]. The well consists of a 1.4-foot tall 4-inch steel pipe with a 2-inch PVC insert and a locked but removable steel cap.

Sampling was conducted during the early morning of May 31, 2007 during a period of extended low tide (Figure 2): Well #6 – 1:30 am, Well #2 – 4:00 am, Quarry Well – 6:45 am, O‘oma – 8:30 am. Each well was bailed using a new 1-liter disposable Teflon bottom weighted bailer unsealed just prior to use. Bailed water was emptied into a small clean bucket and monitored in 3-liter batches for pH and salinity using a YSI DataSonde. Bailed water was obtained from the top 3-feet (the length of the bailer) and from a depth of 7-10 feet below water level to assure clearance of the well volume. At the quarry well, due to it's depth, a gas (compressed nitrogen) powered sample pump (QED micropurge pump controller and PVC bladder pump @ 350 ml/min) positioned at 10-feet below water surface was used to supplement clearance of the well with bailers from the top 3-feet. Bailing continued within each well until stable readings of pH and salinity were achieved. The number of liters removed prior to sampling and the final pH and surface salinity are given in the table below.

Well	Volume Removed	Final pH	Final Salinity
Well 2	21 L	8.93	4.14
Well 6	25 L	8.3	12.30
Quarry (1)	32 L	8.76	4.45
O‘oma (3)	18 L	8.92	7.43

The bailer used for purging was then discarded and samples were obtained using a new, freshly un-sealed bailer at each well and placed in three 1-L amber glass bottles for pesticide and semi-volatile analyses, two 0.5-L containers for metals analysis, and three 40-ml glass vials for volatile analyses. One liter of sample water was filtered in a cleaned and acid-rinsed, Teflon-coated filter apparatus through 0.45 µm filter paper. Paired samples for metals (filtered, unfiltered) were obtained and placed into containers with a nitric acid preservative. 10% nitric acid rinse/cleaning solution for the filter apparatus was obtained from a local Kona laboratory. All samples were immediately placed on ice, and chilled for a minimum of 5 hours before being re-packed and shipped under refrigeration to Honolulu. AECOS Laboratories (Kaneohe Offices), received the samples in Honolulu, refreshed the chill packs and forwarded the samples to CalScience Laboratories for analyses. CalScience Laboratories received the samples in good condition at 10 am on June 2, 2007.

Samples were analyzed for pesticides (EPA method 8081), semi-volatile organic compounds (EPA method 8270), volatile organic compounds (EPA method 8260), Silica, and priority pollutant metals.

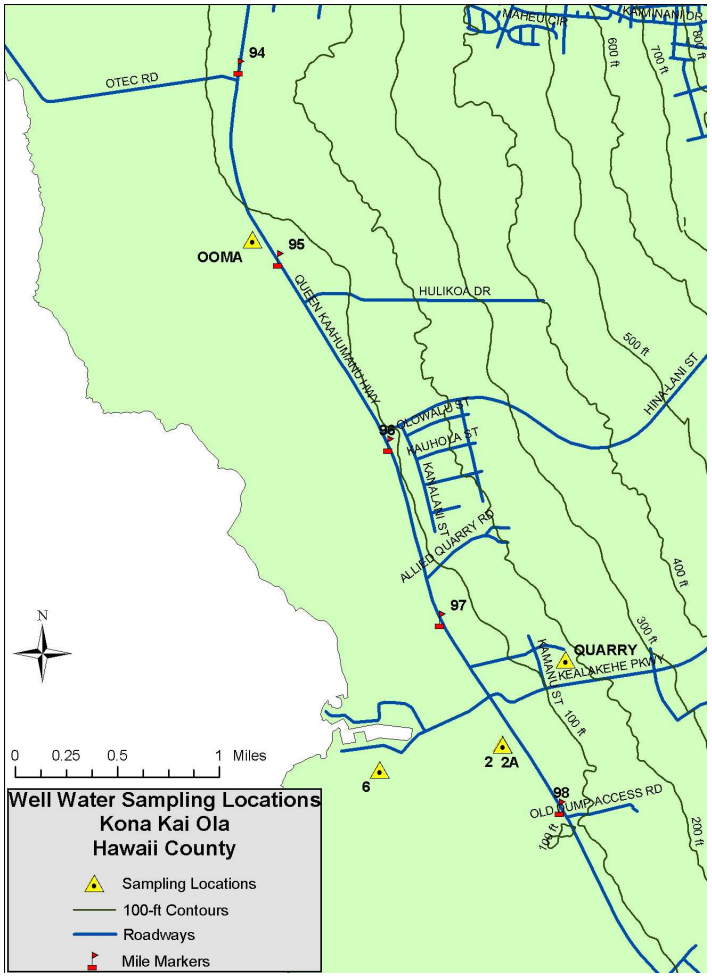

Figure 1. Map of site sampling locations.

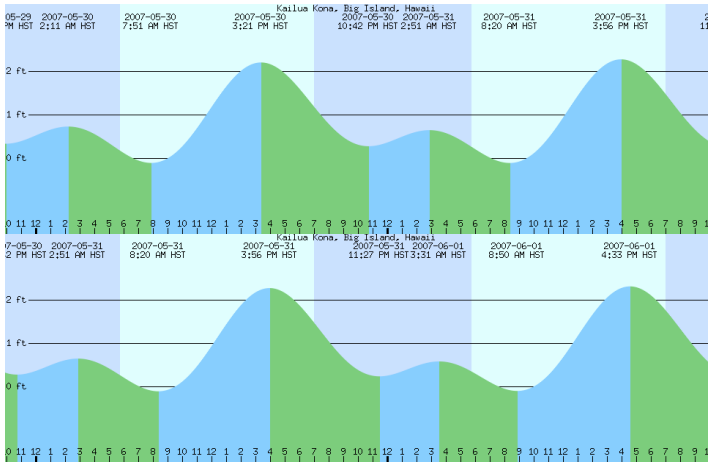

Figure 2. Tide Graphs for May 30th, 2007 (day before sampling) through May 31st, 2007 (day of sampling).

Results and Discussion

Laboratory results are attached to this report as received from CalScience Environmental Laboratories.

A previous study detected phenol, a semi-volatile organic compound commonly used in the production of a wide variety of products including aspirin, weedkiller and synthetic resins, at low concentrations (4-10 µg/L) in shallow wells on NPS property. A subsequent sample obtained from the park well and other surrounding wells (Waimea Water Services / AECOS-Kona, Appendix F) failed to find detectable levels of this chemical in the groundwater. AECOS-Kona obtained samples from wells on the lower site (Well 6), upper site (Well 2A), from the harbor spring, the NPS well adjacent to the site, the Quarry well above the site at an elevation of about 130 feet, and from the effluent of the Kealakehe waste water treatment facility inflow trench at an elevation of about 90 feet above the site. All samples were monitored for contaminants by EPA methods 602 (Aromatics), 608 (Chlorinated Pesticides), 625 (BNA Extractables), and 8151A (Phenoxy Acid Herbicides). All results were below detectable levels.

In this study Oceanit re-sampled the two on-site wells (2A and 6), the Quarry (3) well above the site, and an additional control well, at O‘oma (1) located just north of both the project site and the National Park at an elevation of about 80 feet. These samples were all obtained during low tide to assure maximum concentration of groundwater constituents and were analyzed at a separate laboratory using different analyses techniques, including EPA 8270C (semi-volatile), 8081 (pesticides), and EPA 8260 (volatiles). Results of the analyses showed all chemicals below detectable levels with the exception of the detection of Bis(2-Ethylhexyl) Phthalate in the Quarry well at 14 µg/L, just above the detection level. DEHP is an oily non-water soluble substance with low toxicity commonly used as a plasticizer in the manufacture of PVC but also present in many other products including hydraulic fluid and glow-sticks. The Quarry well is lined with PVC, a possible source of this contaminant.

Of the priority pollutant metals tested (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc) positive results were obtained for copper, lead, nickel, and zinc. Silicon was also detected and is a natural constituent of groundwater often used as a tracer of groundwater inflow to seawater where its concentration is normally very low due to biological up-take. In limited sampling from three wells at the NPS Kaloko-Honokohau park in 1997 the USGS measured levels of chromium between 0.0014 and 0.0029 mg/L but this is lower than our detection limit of 0.005 mg/L. The USGS also recovered copper from these wells at concentrations from 0.0041 to 0.0052 mg/L, and a single recovery of zinc at 0.010 mg/L. All of these metal concentrations measured by the USGS are significantly lower than measured during the present survey.

Silica readings were 30.0 mg/L in well #6, 31.2 mg/L in well 2A, 37.7 mg/L at the quarry, and 39.6 mg/L at O‘oma.

Well	Copper mg/L		Lead mg/L		Nickel mg/L		Zinc mg/L	
Rpt. Limit	0.005		0.01		0.005		0.01	
	Filtered	Un-filtered	Filtered	Un-filtered	Filtered	Un-filtered	Filtered	Un-filtered
O‘oma (1)	0.0139	0.0113	0.0283	0.0383	ND	ND	0.136	0.116
Well 2A	0.0263	0.0262	ND	ND	0.0072	ND	0.0114	ND
Quarry (3)	0.0114	0.0133	0.0500	0.136	ND	ND	0.574	0.0340
Well 6	0.0139	0.0195	ND	ND	ND	ND	0.0178	0.0218

Results of this sampling combined with earlier efforts by the NPS and WWS indicate that the brackish groundwater beneath the proposed Kona Kai Ola project site is free of pollutants and that the use of this groundwater should not be restricted on this basis.

APPENDIX: LABORATORY RESULTS

Calscience Environmental Laboratories, Inc.

June 11, 2007

Snookie Mello
AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Subject: **Calscience Work Order No.: 07-06-0111**
Client Reference: Kona [22866]

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/2/2007 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Ranjit K. Clarke

Calscience Environmental
Laboratories, Inc.
Ranjit Clarke
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3005A Filt. / EPA 7470A Filt.
Method: EPA 6010B / EPA 7470A
Units: mg/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
1H	**07-06-0111-6**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:11:40 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0139	0.00500	1		Silicon	18.5	0.0500	1	
Lead	0.0283	0.0100	1		Zinc	0.136	0.0100	1	

2H	**07-06-0111-8**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:18:19 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	0.00717	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0263	0.00500	1		Silicon	14.6	0.0500	1	
Lead	ND	0.0100	1		Zinc	0.0114	0.0100	1	

3H	**07-06-0111-10**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:20:30 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0114	0.00500	1		Silicon	17.6	0.0500	1	
Lead	0.0500	0.0100	1		Zinc	0.574	0.0100	1	

6H	**07-06-0111-12**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:22:41 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0139	0.00500	1		Silicon	14.0	0.0500	1	
Lead	ND	0.0100	1		Zinc	0.0178	0.0100	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3010A Total / EPA 7470A Total
Method: EPA 6010B / EPA 7470A
Units: mg/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
1G	**07-06-0111-5**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:02:56 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0113	0.00500	1		Silicon	20.2	0.0500	1	
Lead	0.0363	0.0100	1		Zinc	0.116	0.0100	1	

2G	**07-06-0111-7**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:05:10 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0262	0.00500	1		Silicon	16.4	0.0500	1	
Lead	ND	0.0100	1		Zinc	ND	0.0100	1	

3G	**07-06-0111-9**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:07:21 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0133	0.00500	1		Silicon	19.4	0.0500	1	
Lead	0.136	0.0100	1		Zinc	0.340	0.0100	1	

6G	**07-06-0111-11**	**05/31/07**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604L04**

Comment(s): -Mercury was analyzed on 6/4/2007 2:09:31 PM with batch 070604L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Mercury	ND	0.000500	1	
Arsenic	ND	0.0100	1		Nickel	ND	0.00500	1	
Beryllium	ND	0.00100	1		Selenium	ND	0.0150	1	
Cadmium	ND	0.00500	1		Silver	ND	0.00500	1	
Chromium	ND	0.00500	1		Thallium	ND	0.0150	1	
Copper	0.0195	0.00500	1		Silicon	15.4	0.0500	1	
Lead	ND	0.0100	1		Zinc	0.0218	0.0100	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3010A Total / EPA 7470A Total
Method: EPA 6010B / EPA 7470A
Units: mg/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-04-008-2,980**	**N/A**	**Aqueous**	**Mercury**	**06/04/07**	**06/04/07**	**070604L01**

Parameter	Result	RL	DF	Qual
Mercury	ND	0.000500	1	

Method Blank	**097-01-003-7,195**	**N/A**	**Aqueous**	**ICP 5300**	**06/04/07**	**06/04/07**	**070604L04**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Antimony	ND	0.0150	1		Nickel	ND	0.00500	1	
Arsenic	ND	0.0100	1		Selenium	ND	0.0150	1	
Beryllium	ND	0.00100	1		Silver	ND	0.00500	1	
Cadmium	ND	0.00500	1		Thallium	ND	0.0150	1	
Chromium	ND	0.00500	1		Silicon	ND	0.0500	1	
Copper	ND	0.00500	1		Zinc	ND	0.0100	1	
Lead	ND	0.0100	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.		Date Received:	06/02/07
45-939 Kamehameha Hwy #104		Work Order No.:	07-06-0111
Kanehoe, HI 96744-3221		Preparation:	EPA 3005A Filt.
		Method:	EPA 6010B
		Units:	mg/L

Project: Kona [22866] — Page 1 of 2

Quality Control Sample ID	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
1H	07-06-0111-6	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	39.6	0.107	1	

2H	07-06-0111-8	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	31.2	0.107	1	

3H	07-06-0111-10	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	37.7	0.107	1	

6H	07-06-0111-12	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	30.0	0.107	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers *

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.		Date Received:	06/02/07
45-939 Kamehameha Hwy #104		Work Order No.:	07-06-0111
Kanehoe, HI 96744-3221		Preparation:	EPA 3010A Total
		Method:	EPA 6010B
		Units:	mg/L

Project: Kona [22866] — Page 2 of 2

Quality Control Sample ID	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
1G	07-06-0111-5	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	43.2	0.107	1	

2G	07-06-0111-7	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	35.1	0.107	1	

3G	07-06-0111-9	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	41.5	0.107	1	

6G	07-06-0111-11	05/31/07	Aqueous	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	33.0	0.107	1	

Method Blank	097-01-003-7195	N/A	Aqueous	06/04/07	06/04/07	070604L04

Parameter	Result	RL	DF	Qual
Silica (SiO_2)	ND	0.107	1	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers *

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8270C
Units: ug/L

Project: Kona [22866]

Page 1 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
1	07-06-0111-1	05/31/07	Aqueous	GC/MS P	06/04/07	06/05/07	070604L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
N-Nitrosodimethylamine	ND	10	1		4-Nitrophenol	ND	10	1	
Aniline	ND	10	1		Dibenzofuran	ND	10	1	
Phenol	ND	10	1		2,4-Dinitrotoluene	ND	10	1	
Bis(2-Chloroethyl) Ether	ND	25	1		2,6-Dinitrotoluene	ND	10	1	
2-Chlorophenol	ND	10	1		Diethyl Phthalate	ND	10	1	
1,3-Dichlorobenzene	ND	10	1		4-Chlorophenyl-Phenyl Ether	ND	10	1	
1,4-Dichlorobenzene	ND	10	1		Fluorene	ND	10	1	
Benzyl Alcohol	ND	10	1		4-Nitroaniline	ND	10	1	
1,2-Dichlorobenzene	ND	10	1		Azobenzene	ND	10	1	
2-Methylphenol	ND	10	1		4,6-Dinitro-2-Methylphenol	ND	50	1	
Bis(2-Chloroisopropyl) Ether	ND	10	1		N-Nitrosodiphenylamine	ND	10	1	
3/4-Methylphenol	ND	10	1		4-Bromophenyl-Phenyl Ether	ND	10	1	
N-Nitroso-di-n-propylamine	ND	10	1		Hexachlorobenzene	ND	10	1	
Hexachloroethane	ND	10	1		Pentachlorophenol	ND	10	1	
Nitrobenzene	ND	25	1		Phenanthrene	ND	10	1	
Isophorone	ND	10	1		Anthracene	ND	10	1	
2-Nitrophenol	ND	10	1		Di-n-Butyl Phthalate	ND	10	1	
2,4-Dimethylphenol	ND	10	1		Fluoranthene	ND	10	1	
Benzoic Acid	ND	50	1		Benzidine	ND	50	1	
Bis(2-Chloroethoxy) Methane	ND	10	1		Pyrene	ND	10	1	
2,4-Dichlorophenol	ND	10	1		Pyridine	ND	10	1	
Naphthalene	ND	10	1		Butyl Benzyl Phthalate	ND	10	1	
4-Chloroaniline	ND	10	1		3,3'-Dichlorobenzidine	ND	25	1	
Hexachloro-1,3-Butadiene	ND	10	1		Benzo (a) Anthracene	ND	10	1	
4-Chloro-3-Methylphenol	ND	10	1		Bis(2-Ethylhexyl) Phthalate	ND	10	1	
2-Methylnaphthalene	ND	10	1		Chrysene	ND	10	1	
Hexachlorocyclopentadiene	ND	25	1		Di-n-Octyl Phthalate	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1		Benzo (k) Fluoranthene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1		Benzo (b) Fluoranthene	ND	10	1	
2-Chloronaphthalene	ND	10	1		Benzo (a) Pyrene	ND	10	1	
2-Nitroaniline	ND	10	1		Benzo (g,h,i) Perylene	ND	10	1	
Dimethyl Phthalate	ND	10	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Acenaphthylene	ND	10	1		Dibenz (a,h) Anthracene	ND	10	1	
3-Nitroaniline	ND	10	1		1-Methylnaphthalene	ND	10	1	
Acenaphthene	ND	10	1		1,2,4-Trichlorobenzene	ND	10	1	
2,4-Dinitrophenol	ND	50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorophenol	69	7-121		Phenol-d6	50	1-127	
Nitrobenzene-d5	103	50-146		2-Fluorobiphenyl	95	42-138	
2,4,6-Tribromophenol	51	41-137		p-Terphenyl-d14	186	47-173	2

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8270C
Units: ug/L

Project: Kona [22866]

Page 2 of 5

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
2	07-06-0111-2	05/31/07	Aqueous	GC/MS P	06/04/07	06/05/07	070604L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
N-Nitrosodimethylamine	ND	10	1		4-Nitrophenol	ND	10	1	
Aniline	ND	10	1		Dibenzofuran	ND	10	1	
Phenol	ND	10	1		2,4-Dinitrotoluene	ND	10	1	
Bis(2-Chloroethyl) Ether	ND	25	1		2,6-Dinitrotoluene	ND	10	1	
2-Chlorophenol	ND	10	1		Diethyl Phthalate	ND	10	1	
1,3-Dichlorobenzene	ND	10	1		4-Chlorophenyl-Phenyl Ether	ND	10	1	
1,4-Dichlorobenzene	ND	10	1		Fluorene	ND	10	1	
Benzyl Alcohol	ND	10	1		4-Nitroaniline	ND	10	1	
1,2-Dichlorobenzene	ND	10	1		Azobenzene	ND	10	1	
2-Methylphenol	ND	10	1		4,6-Dinitro-2-Methylphenol	ND	50	1	
Bis(2-Chloroisopropyl) Ether	ND	10	1		N-Nitrosodiphenylamine	ND	10	1	
3/4-Methylphenol	ND	10	1		4-Bromophenyl-Phenyl Ether	ND	10	1	
N-Nitroso-di-n-propylamine	ND	10	1		Hexachlorobenzene	ND	10	1	
Hexachloroethane	ND	10	1		Pentachlorophenol	ND	10	1	
Nitrobenzene	ND	25	1		Phenanthrene	ND	10	1	
Isophorone	ND	10	1		Anthracene	ND	10	1	
2-Nitrophenol	ND	10	1		Di-n-Butyl Phthalate	ND	10	1	
2,4-Dimethylphenol	ND	10	1		Fluoranthene	ND	10	1	
Benzoic Acid	ND	50	1		Benzidine	ND	50	1	
Bis(2-Chloroethoxy) Methane	ND	10	1		Pyrene	ND	10	1	
2,4-Dichlorophenol	ND	10	1		Pyridine	ND	10	1	
Naphthalene	ND	10	1		Butyl Benzyl Phthalate	ND	10	1	
4-Chloroaniline	ND	10	1		3,3'-Dichlorobenzidine	ND	25	1	
Hexachloro-1,3-Butadiene	ND	10	1		Benzo (a) Anthracene	ND	10	1	
4-Chloro-3-Methylphenol	ND	10	1		Bis(2-Ethylhexyl) Phthalate	ND	10	1	
2-Methylnaphthalene	ND	10	1		Chrysene	ND	10	1	
Hexachlorocyclopentadiene	ND	25	1		Di-n-Octyl Phthalate	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1		Benzo (k) Fluoranthene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1		Benzo (b) Fluoranthene	ND	10	1	
2-Chloronaphthalene	ND	10	1		Benzo (a) Pyrene	ND	10	1	
2-Nitroaniline	ND	10	1		Benzo (g,h,i) Perylene	ND	10	1	
Dimethyl Phthalate	ND	10	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Acenaphthylene	ND	10	1		Dibenz (a,h) Anthracene	ND	10	1	
3-Nitroaniline	ND	10	1		1-Methylnaphthalene	ND	10	1	
Acenaphthene	ND	10	1		1,2,4-Trichlorobenzene	ND	10	1	
2,4-Dinitrophenol	ND	50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorophenol	65	7-121		Phenol-d6	47	1-127	
Nitrobenzene-d5	98	50-146		2-Fluorobiphenyl	80	42-138	
2,4,6-Tribromophenol	48	41-137		p-Terphenyl-d14	166	47-173	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8270C
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
3	07-06-0111-3	05/31/07	Aqueous	GC/MS P	06/04/07	06/05/07	070604L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
N-Nitrosodimethylamine	ND	10	1		4-Nitrophenol	ND	10	1	
Aniline	ND	10	1		Dibenzofuran	ND	10	1	
Phenol	ND	10	1		2,4-Dinitrotoluene	ND	10	1	
Bis(2-Chloroethyl) Ether	ND	25	1		2,6-Dinitrotoluene	ND	10	1	
2-Chlorophenol	ND	10	1		Diethyl Phthalate	ND	10	1	
1,3-Dichlorobenzene	ND	10	1		4-Chlorophenyl-Phenyl Ether	ND	10	1	
1,4-Dichlorobenzene	ND	10	1		Fluorene	ND	10	1	
Benzyl Alcohol	ND	10	1		4-Nitroaniline	ND	10	1	
1,2-Dichlorobenzene	ND	10	1		Azobenzene	ND	10	1	
2-Methylphenol	ND	10	1		4,6-Dinitro-2-Methylphenol	ND	50	1	
Bis(2-Chloroisopropyl) Ether	ND	10	1		N-Nitrosodiphenylamine	ND	10	1	
3/4-Methylphenol	ND	10	1		4-Bromophenyl-Phenyl Ether	ND	10	1	
N-Nitroso-di-n-propylamine	ND	10	1		Hexachlorobenzene	ND	10	1	
Hexachloroethane	ND	10	1		Pentachlorophenol	ND	10	1	
Nitrobenzene	ND	25	1		Phenanthrene	ND	10	1	
Isophorone	ND	10	1		Anthracene	ND	10	1	
2-Nitrophenol	ND	10	1		Di-n-Butyl Phthalate	ND	10	1	
2,4-Dimethylphenol	ND	10	1		Fluoranthene	ND	10	1	
Benzoic Acid	ND	50	1		Benzidine	ND	50	1	
Bis(2-Chloroethoxy) Methane	ND	10	1		Pyrene	ND	10	1	
2,4-Dichlorophenol	ND	10	1		Pyridine	ND	10	1	
Naphthalene	ND	10	1		Butyl Benzyl Phthalate	ND	10	1	
4-Chloroaniline	ND	10	1		3,3'-Dichlorobenzidine	ND	25	1	
Hexachloro-1,3-Butadiene	ND	10	1		Benzo (a) Anthracene	ND	10	1	
4-Chloro-3-Methylphenol	ND	10	1		Bis(2-Ethylhexyl) Phthalate	14	10	1	
2-Methylnaphthalene	ND	10	1		Chrysene	ND	10	1	
Hexachlorocyclopentadiene	ND	25	1		Di-n-Octyl Phthalate	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1		Benzo (k) Fluoranthene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1		Benzo (b) Fluoranthene	ND	10	1	
2-Chloronaphthalene	ND	10	1		Benzo (a) Pyrene	ND	10	1	
2-Nitroaniline	ND	10	1		Benzo (g,h,i) Perylene	ND	10	1	
Dimethyl Phthalate	ND	10	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Acenaphthylene	ND	10	1		Dibenz (a,h) Anthracene	ND	10	1	
3-Nitroaniline	ND	10	1		1-Methylnaphthalene	ND	10	1	
Acenaphthene	ND	10	1		1,2,4-Trichlorobenzene	ND	10	1	
2,4-Dinitrophenol	ND	50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorophenol	64	7-121		Phenol-d6	44	1-127	
Nitrobenzene-d5	103	50-146		2-Fluorobiphenyl	93	42-138	
2,4,6-Tribromophenol	57	41-137		p-Terphenyl-d14	170	47-173	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8270C
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
6	07-06-0111-4	05/31/07	Aqueous	GC/MS P	06/04/07	06/05/07	070604L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
N-Nitrosodimethylamine	ND	10	1		4-Nitrophenol	ND	10	1	
Aniline	ND	10	1		Dibenzofuran	ND	10	1	
Phenol	ND	10	1		2,4-Dinitrotoluene	ND	10	1	
Bis(2-Chloroethyl) Ether	ND	25	1		2,6-Dinitrotoluene	ND	10	1	
2-Chlorophenol	ND	10	1		Diethyl Phthalate	ND	10	1	
1,3-Dichlorobenzene	ND	10	1		4-Chlorophenyl-Phenyl Ether	ND	10	1	
1,4-Dichlorobenzene	ND	10	1		Fluorene	ND	10	1	
Benzyl Alcohol	ND	10	1		4-Nitroaniline	ND	10	1	
1,2-Dichlorobenzene	ND	10	1		Azobenzene	ND	10	1	
2-Methylphenol	ND	10	1		4,6-Dinitro-2-Methylphenol	ND	50	1	
Bis(2-Chloroisopropyl) Ether	ND	10	1		N-Nitrosodiphenylamine	ND	10	1	
3/4-Methylphenol	ND	10	1		4-Bromophenyl-Phenyl Ether	ND	10	1	
N-Nitroso-di-n-propylamine	ND	10	1		Hexachlorobenzene	ND	10	1	
Hexachloroethane	ND	10	1		Pentachlorophenol	ND	10	1	
Nitrobenzene	ND	25	1		Phenanthrene	ND	10	1	
Isophorone	ND	10	1		Anthracene	ND	10	1	
2-Nitrophenol	ND	10	1		Di-n-Butyl Phthalate	ND	10	1	
2,4-Dimethylphenol	ND	10	1		Fluoranthene	ND	10	1	
Benzoic Acid	ND	50	1		Benzidine	ND	50	1	
Bis(2-Chloroethoxy) Methane	ND	10	1		Pyrene	ND	10	1	
2,4-Dichlorophenol	ND	10	1		Pyridine	ND	10	1	
Naphthalene	ND	10	1		Butyl Benzyl Phthalate	ND	10	1	
4-Chloroaniline	ND	10	1		3,3'-Dichlorobenzidine	ND	25	1	
Hexachloro-1,3-Butadiene	ND	10	1		Benzo (a) Anthracene	ND	10	1	
4-Chloro-3-Methylphenol	ND	10	1		Bis(2-Ethylhexyl) Phthalate	ND	10	1	
2-Methylnaphthalene	ND	10	1		Chrysene	ND	10	1	
Hexachlorocyclopentadiene	ND	25	1		Di-n-Octyl Phthalate	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1		Benzo (k) Fluoranthene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1		Benzo (b) Fluoranthene	ND	10	1	
2-Chloronaphthalene	ND	10	1		Benzo (a) Pyrene	ND	10	1	
2-Nitroaniline	ND	10	1		Benzo (g,h,i) Perylene	ND	10	1	
Dimethyl Phthalate	ND	10	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Acenaphthylene	ND	10	1		Dibenz (a,h) Anthracene	ND	10	1	
3-Nitroaniline	ND	10	1		1-Methylnaphthalene	ND	10	1	
Acenaphthene	ND	10	1		1,2,4-Trichlorobenzene	ND	10	1	
2,4-Dinitrophenol	ND	50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorophenol	70	7-121		Phenol-d6	51	1-127	
Nitrobenzene-d5	99	50-146		2-Fluorobiphenyl	82	42-138	
2,4,6-Tribromophenol	57	41-137		p-Terphenyl-d14	194	47-173	2

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8270C
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**095-01-003-2,171**	**N/A**	**Aqueous**	**GC/MS P**	**06/04/07**	**06/07/07**	**070604L03**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
N-Nitrosodimethylamine	ND	10	1		4-Nitrophenol	ND	10	1	
Aniline	ND	10	1		Dibenzofuran	ND	10	1	
Phenol	ND	10	1		2,4-Dinitrotoluene	ND	10	1	
Bis(2-Chloroethyl) Ether	ND	25	1		2,6-Dinitrotoluene	ND	10	1	
2-Chlorophenol	ND	10	1		Diethyl Phthalate	ND	10	1	
1,3-Dichlorobenzene	ND	10	1		4-Chlorophenyl-Phenyl Ether	ND	10	1	
1,4-Dichlorobenzene	ND	10	1		Fluorene	ND	10	1	
Benzyl Alcohol	ND	10	1		4-Nitroaniline	ND	10	1	
1,2-Dichlorobenzene	ND	10	1		Azobenzene	ND	10	1	
2-Methylphenol	ND	10	1		4,6-Dinitro-2-Methylphenol	ND	50	1	
Bis(2-Chloroisopropyl) Ether	ND	10	1		N-Nitrosodiphenylamine	ND	10	1	
3/4-Methylphenol	ND	10	1		4-Bromophenyl-Phenyl Ether	ND	10	1	
N-Nitroso-di-n-propylamine	ND	10	1		Hexachlorobenzene	ND	10	1	
Hexachloroethane	ND	10	1		Pentachlorophenol	ND	10	1	
Nitrobenzene	ND	25	1		Phenanthrene	ND	10	1	
Isophorone	ND	10	1		Anthracene	ND	10	1	
2-Nitrophenol	ND	10	1		Di-n-Butyl Phthalate	ND	10	1	
2,4-Dimethylphenol	ND	10	1		Fluoranthene	ND	10	1	
Benzoic Acid	ND	50	1		Benzidine	ND	50	1	
Bis(2-Chloroethoxy) Methane	ND	10	1		Pyrene	ND	10	1	
2,4-Dichlorophenol	ND	10	1		Pyridine	ND	10	1	
Naphthalene	ND	10	1		Butyl Benzyl Phthalate	ND	10	1	
4-Chloroaniline	ND	10	1		3,3'-Dichlorobenzidine	ND	25	1	
Hexachloro-1,3-Butadiene	ND	10	1		Benzo (a) Anthracene	ND	10	1	
4-Chloro-3-Methylphenol	ND	10	1		Bis(2-Ethylhexyl) Phthalate	ND	10	1	
2-Methylnaphthalene	ND	10	1		Chrysene	ND	10	1	
Hexachlorocyclopentadiene	ND	25	1		Di-n-Octyl Phthalate	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1		Benzo (k) Fluoranthene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1		Benzo (b) Fluoranthene	ND	10	1	
2-Chloronaphthalene	ND	10	1		Benzo (a) Pyrene	ND	10	1	
2-Nitroaniline	ND	10	1		Benzo (g,h,i) Perylene	ND	10	1	
Dimethyl Phthalate	ND	10	1		Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Acenaphthylene	ND	10	1		Dibenz (a,h) Anthracene	ND	10	1	
3-Nitroaniline	ND	10	1		1-Methylnaphthalene	ND	10	1	
Acenaphthene	ND	10	1		1,2,4-Trichlorobenzene	ND	10	1	
2,4-Dinitrophenol	ND	50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorophenol	38	7-121		Phenol-d6	25	1-127	
Nitrobenzene-d5	59	50-146		2-Fluorobiphenyl	79	42-138	
2,4,6-Tribromophenol	43	41-137		p-Terphenyl-d14	107	47-173	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8081A
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
1	**07-06-0111-1**	**05/31/07**	**Aqueous**	**GC 16**	**06/04/07**	**06/05/07**	**070604L04**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Alpha-BHC	ND	0.10	1		Endrin	ND	0.10	1	
Gamma-BHC	ND	0.10	1		Endrin Aldehyde	ND	0.10	1	
Beta-BHC	ND	0.10	1		4,4'-DDD	ND	0.10	1	
Heptachlor	ND	0.10	1		Endosulfan II	ND	0.10	1	
Delta-BHC	ND	0.10	1		4,4'-DDT	ND	0.10	1	
Aldrin	ND	0.10	1		Endosulfan Sulfate	ND	0.10	1	
Heptachlor Epoxide	ND	0.10	1		Methoxychlor	ND	0.10	1	
Endosulfan I	ND	0.10	1		Chlordane	ND	1.0	1	
Dieldrin	ND	0.10	1		Toxaphene	ND	2.0	1	
4,4'-DDE	ND	0.10	1		Endrin Ketone	ND	0.10	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	91	50-135		2,4,5,6-Tetrachloro-m-Xylene	76	50-135	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
2	**07-06-0111-2**	**05/31/07**	**Aqueous**	**GC 16**	**06/04/07**	**06/05/07**	**070604L04**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Alpha-BHC	ND	0.10	1		Endrin	ND	0.10	1	
Gamma-BHC	ND	0.10	1		Endrin Aldehyde	ND	0.10	1	
Beta-BHC	ND	0.10	1		4,4'-DDD	ND	0.10	1	
Heptachlor	ND	0.10	1		Endosulfan II	ND	0.10	1	
Delta-BHC	ND	0.10	1		4,4'-DDT	ND	0.10	1	
Aldrin	ND	0.10	1		Endosulfan Sulfate	ND	0.10	1	
Heptachlor Epoxide	ND	0.10	1		Methoxychlor	ND	0.10	1	
Endosulfan I	ND	0.10	1		Chlordane	ND	1.0	1	
Dieldrin	ND	0.10	1		Toxaphene	ND	2.0	1	
4,4'-DDE	ND	0.10	1		Endrin Ketone	ND	0.10	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	84	50-135		2,4,5,6-Tetrachloro-m-Xylene	75	50-135	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8081A
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
3	07-06-0111-3	05/31/07	Aqueous	GC 16	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Alpha-BHC	ND	0.10	1		Endrin	ND	0.10	1	
Gamma-BHC	ND	0.10	1		Endrin Aldehyde	ND	0.10	1	
Beta-BHC	ND	0.10	1		4,4'-DDD	ND	0.10	1	
Heptachlor	ND	0.10	1		Endosulfan II	ND	0.10	1	
Delta-BHC	ND	0.10	1		4,4'-DDT	ND	0.10	1	
Aldrin	ND	0.10	1		Endosulfan Sulfate	ND	0.10	1	
Heptachlor Epoxide	ND	0.10	1		Methoxychlor	ND	0.10	1	
Endosulfan I	ND	0.10	1		Chlordane	ND	1.0	1	
Dieldrin	ND	0.10	1		Toxaphene	ND	2.0	1	
4,4'-DDE	ND	0.10	1		Endrin Ketone	ND	0.10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Decachlorobiphenyl	85	50-135			2,4,5,6-Tetrachloro-m-Xylene	76	50-135		

6	07-06-0111-4	05/31/07	Aqueous	GC 16	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Alpha-BHC	ND	0.10	1		Endrin	ND	0.10	1	
Gamma-BHC	ND	0.10	1		Endrin Aldehyde	ND	0.10	1	
Beta-BHC	ND	0.10	1		4,4'-DDD	ND	0.10	1	
Heptachlor	ND	0.10	1		Endosulfan II	ND	0.10	1	
Delta-BHC	ND	0.10	1		4,4'-DDT	ND	0.10	1	
Aldrin	ND	0.10	1		Endosulfan Sulfate	ND	0.10	1	
Heptachlor Epoxide	ND	0.10	1		Methoxychlor	ND	0.10	1	
Endosulfan I	ND	0.10	1		Chlordane	ND	1.0	1	
Dieldrin	ND	0.10	1		Toxaphene	ND	2.0	1	
4,4'-DDE	ND	0.10	1		Endrin Ketone	ND	0.10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Decachlorobiphenyl	81	50-135			2,4,5,6-Tetrachloro-m-Xylene	64	50-135		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 3510B
Method: EPA 8081A
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	099-12-529-26	N/A	Aqueous	GC 16	06/04/07	06/05/07	070604L04

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Alpha-BHC	ND	0.050	0.5		Endrin	ND	0.050	0.5	
Gamma-BHC	ND	0.050	0.5		Endrin Aldehyde	ND	0.050	0.5	
Beta-BHC	ND	0.050	0.5		4,4'-DDD	ND	0.050	0.5	
Heptachlor	ND	0.050	0.5		Endosulfan II	ND	0.050	0.5	
Delta-BHC	ND	0.050	0.5		4,4'-DDT	ND	0.050	0.5	
Aldrin	ND	0.050	0.5		Endosulfan Sulfate	ND	0.050	0.5	
Heptachlor Epoxide	ND	0.050	0.5		Methoxychlor	ND	0.050	0.5	
Endosulfan I	ND	0.050	0.5		Chlordane	ND	0.50	0.5	
Dieldrin	ND	0.050	0.5		Toxaphene	ND	1.0	0.5	
4,4'-DDE	ND	0.050	0.5		Endrin Ketone	ND	0.050	0.5	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Decachlorobiphenyl	85	50-135			2,4,5,6-Tetrachloro-m-Xylene	62	50-135		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
1	07-06-0111-1	05/31/07	Aqueous	GC/MS Z	06/05/07	06/06/07	070605L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	1.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	121	74-140		1,2-Dichloroethane-d4	118	74-146	
Toluene-d8	104	88-112		1,4-Bromofluorobenzene	92	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
2	07-06-0111-2	05/31/07	Aqueous	GC/MS Z	06/05/07	06/06/07	070605L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	1.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	114	74-140		1,2-Dichloroethane-d4	115	74-146	
Toluene-d8	105	88-112		1,4-Bromofluorobenzene	92	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
3	07-06-0111-3	05/31/07	Aqueous	GC/MS Z	06/05/07	06/06/07	070605L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	1.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	74-140		1,2-Dichloroethane-d4	121	74-146	
Toluene-d8	103	88-112		1,4-Bromofluorobenzene	91	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.
45-939 Kamehameha Hwy #104
Kaneohe, HI 96744-3221

Date Received: 06/02/07
Work Order No: 07-06-0111
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
6	07-06-0111-4	05/31/07	Aqueous	GC/MS Z	06/05/07	06/06/07	070605L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	1.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	74-140		1,2-Dichloroethane-d4	117	74-146	
Toluene-d8	102	88-112		1,4-Bromofluorobenzene	91	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

AECOS, Inc.	Date Received:	06/02/07
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L

Project: Kona [22866]

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-10-006-21,622**	**N/A**	**Aqueous**	**GC/MS Z**	**06/05/07**	**06/06/07**	**070605L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		1,3-Dichloropropane	ND	1.0	1	
Benzene	ND	0.50	1		2,2-Dichloropropane	ND	1.0	1	
Bromobenzene	ND	1.0	1		1,1-Dichloropropene	ND	1.0	1	
Bromochloromethane	ND	1.0	1		c-1,3-Dichloropropene	ND	0.50	1	
Bromodichloromethane	ND	1.0	1		t-1,3-Dichloropropene	ND	0.50	1	
Bromoform	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromomethane	ND	10	1		2-Hexanone	ND	10	1	
2-Butanone	ND	10	1		Isopropylbenzene	ND	1.0	1	
n-Butylbenzene	ND	1.0	1		p-Isopropyltoluene	ND	1.0	1	
sec-Butylbenzene	ND	1.0	1		Methylene Chloride	ND	10	1	
tert-Butylbenzene	ND	1.0	1		4-Methyl-2-Pentanone	ND	10	1	
Carbon Disulfide	ND	10	1		Naphthalene	ND	10	1	
Carbon Tetrachloride	ND	0.50	1		n-Propylbenzene	ND	1.0	1	
Chlorobenzene	ND	1.0	1		Styrene	ND	1.0	1	
Chloroethane	ND	1.0	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Chloroform	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	1.0	1	
Chloromethane	ND	10	1		Tetrachloroethene	ND	1.0	1	
2-Chlorotoluene	ND	1.0	1		Toluene	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,2,3-Trichlorobenzene	ND	1.0	1	
Dibromochloromethane	ND	1.0	1		1,2,4-Trichlorobenzene	ND	1.0	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		1,1,1-Trichloroethane	ND	1.0	1	
1,2-Dibromoethane	ND	1.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
1,2-Dichlorobenzene	ND	1.0	1		Trichloroethene	ND	1.0	1	
1,3-Dichlorobenzene	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
1,4-Dichlorobenzene	ND	1.0	1		1,2,3-Trichloropropane	ND	5.0	1	
Dichlorodifluoromethane	ND	1.0	1		1,2,4-Trimethylbenzene	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		1,3,5-Trimethylbenzene	ND	1.0	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Acetate	ND	10	1	
1,1-Dichloroethene	ND	1.0	1		Vinyl Chloride	ND	0.50	1	
c-1,2-Dichloroethene	ND	1.0	1		p/m-Xylene	ND	1.0	1	
t-1,2-Dichloroethene	ND	1.0	1		o-Xylene	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	1.0	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	123	74-140		1,2-Dichloroethane-d4	121	74-146	
Toluene-d8	101	88-112		1,4-Bromofluorobenzene	90	74-110	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AECOS, Inc.	Date Received:	06/02/07
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 3010A Total
	Method:	EPA 6010B

Project Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
1G	**Aqueous**	**ICP 5300**	**06/04/07**	**06/05/07**	**070604S04**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Antimony	111	109	72-132	1	0-10	
Arsenic	115	112	80-140	2	0-11	
Beryllium	106	105	89-119	1	0-8	
Cadmium	102	102	82-124	1	0-7	
Chromium	100	100	86-122	0	0-8	
Copper	108	107	78-126	1	0-7	
Lead	101	98	84-120	2	0-7	
Nickel	102	101	84-120	1	0-7	
Selenium	109	104	79-127	4	0-9	
Silver	111	111	86-128	0	0-7	
Thallium	96	95	79-121	2	0-8	
Silicon	4X	4X	24-180	4X	0-15	Q
Zinc	117	116	89-131	1	0-8	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AECOS, Inc.	Date Received:	06/02/07
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 7470A Total
	Method:	EPA 7470A

Project Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
1G	Aqueous	Mercury	06/04/07	06/04/07	070604S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	101	101	66-126	0	0-7	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AECOS, Inc.	Date Received:	06/02/07
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 5030B
	Method:	EPA 8260B

Project Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
07-06-0166-2	Aqueous	GC/MS Z	06/05/07	06/06/07	070605S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	95	93	88-118	1	0-7	
Carbon Tetrachloride	86	85	67-145	0	0-11	
Chlorobenzene	93	92	88-118	2	0-7	
1,2-Dichlorobenzene	93	90	86-116	3	0-8	
1,1-Dichloroethene	105	103	70-130	2	0-25	
Toluene	95	94	87-123	1	0-8	
Trichloroethene	88	89	79-127	0	0-10	
Vinyl Chloride	91	93	69-129	3	0-13	
Methyl-t-Butyl Ether (MTBE)	85	88	71-131	3	0-13	
Tert-Butyl Alcohol (TBA)	57	58	36-168	2	0-45	
Diisopropyl Ether (DIPE)	98	100	81-123	2	0-9	
Ethyl-t-Butyl Ether (ETBE)	85	88	72-126	3	0-12	
Tert-Amyl-Methyl Ether (TAME)	83	85	72-126	2	0-12	
Ethanol	90	85	53-149	6	0-31	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

AECOS, Inc.	Date Received:	N/A
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 3010A Total
	Method:	EPA 6010B

Project: Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
097-01-003-7,195	Aqueous	ICP 5300	06/04/07	06/04/07	070604L04

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Antimony	100	99	80-120	1	0-20	
Arsenic	99	99	80-120	0	0-20	
Beryllium	96	96	80-120	0	0-20	
Cadmium	101	101	80-120	0	0-20	
Chromium	102	102	80-120	0	0-20	
Copper	96	96	80-120	0	0-20	
Lead	104	103	80-120	1	0-20	
Nickel	110	109	80-120	1	0-20	
Selenium	97	94	80-120	2	0-20	
Silver	98	98	80-120	0	0-20	
Thallium	104	104	80-120	0	0-20	
Silicon	103	101	80-120	2	0-20	
Zinc	103	103	80-120	0	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

AECOS, Inc.	Date Received:	N/A
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 7470A Total
	Method:	EPA 7470A

Project: Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-04-008-2,980	Aqueous	Mercury	06/04/07	06/04/07	070604L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	104	105	85-121	0	0-4	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

AECOS, Inc.	Date Received:	N/A
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 3510B
	Method:	EPA 8270C

Project: Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-003-2,171	Aqueous	GC/MS P	06/04/07	06/07/07	070604L03

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Phenol	37	36	4-142	1	0-24	
2-Chlorophenol	74	73	53-113	1	0-17	
1,4-Dichlorobenzene	97	95	50-122	2	0-19	
N-Nitroso-di-n-propylamine	64	65	56-146	2	0-22	
4-Chloro-3-Methylphenol	74	77	55-121	3	0-18	
Acenaphthene	103	100	55-139	3	0-17	
4-Nitrophenol	26	26	1-145	0	0-29	
2,4-Dinitrotoluene	86	85	41-161	1	0-22	
Pentachlorophenol	46	47	34-130	1	0-23	
Pyrene	124	121	38-170	3	0-27	
1,2,4-Trichlorobenzene	92	90	49-121	2	0-19	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

AECOS, Inc.	Date Received:	N/A
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 3510B
	Method:	EPA 8081A

Project: Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-529-26	Aqueous	GC 16	06/04/07	06/05/07	070604L04

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Alpha-BHC	90	89	50-135	0	0-25	
Gamma-BHC	92	91	50-135	1	0-25	
Beta-BHC	133	125	50-135	6	0-25	
Heptachlor	99	86	50-135	14	0-25	
Delta-BHC	91	93	50-135	2	0-25	
Aldrin	68	59	50-135	15	0-25	
Heptachlor Epoxide	88	97	50-135	10	0-25	
Endosulfan I	79	78	50-135	2	0-25	
Dieldrin	94	102	50-135	8	0-25	
4,4'-DDE	82	79	50-135	4	0-25	
Endrin	90	95	50-135	6	0-25	
Endrin Aldehyde	80	81	50-135	1	0-25	
4,4'-DDD	95	95	50-135	0	0-25	
Endosulfan II	77	70	50-135	10	0-25	
4,4'-DDT	83	81	50-135	3	0-25	
Endosulfan Sulfate	63	58	50-135	7	0-25	
Methoxychlor	73	71	50-135	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

AECOS, Inc.	Date Received:	N/A
45-939 Kamehameha Hwy #104	Work Order No:	07-06-0111
Kaneohe, HI 96744-3221	Preparation:	EPA 5030B
	Method:	EPA 8260B

Project: Kona [22866]

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-10-006-21,622	Aqueous	GC/MS Z	06/05/07	06/06/07	070605L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	97	100	84-120	3	0-8	
Carbon Tetrachloride	89	92	63-147	3	0-10	
Chlorobenzene	97	98	89-119	1	0-7	
1,2-Dichlorobenzene	97	96	89-119	1	0-9	
1,1-Dichloroethene	107	110	77-125	3	0-16	
Toluene	98	101	83-125	2	0-9	
Trichloroethene	93	97	89-119	4	0-8	
Vinyl Chloride	96	101	63-135	5	0-13	
Methyl-t-Butyl Ether (MTBE)	90	88	82-118	2	0-13	
Tert-Butyl Alcohol (TBA)	62	63	46-154	2	0-32	
Diisopropyl Ether (DIPE)	100	101	81-123	1	0-11	
Ethyl-t-Butyl Ether (ETBE)	88	90	74-122	2	0-12	
Tert-Amyl-Methyl Ether (TAME)	87	86	76-124	1	0-10	
Ethanol	78	78	60-138	1	0-32	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 07-06-0111

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

07-06-0111

AECOS, Inc.

45-939 Kamehameha Highway Suite 104
Kaneohe, Oahu, HI 96744
Tel: (808) 234-7770 Fax: 234-7775

p. 1 of 2

SUB-- CHAIN OF CUSTODY FORM

PROJECT FILE No.: Kona 631
LOG NUMBER: [22866]

CLIENT: AECOS INC.
ADDRESS:
CONTACT: SNOOKIE MELLO
PHONE No.: ☎ (808)234-7770
Purchase Order No.:

☐ RUSH
☐ SEE REVERSE
SPECIAL INSTRUCTIONS

	☑	SAMPLE ID	SAMPLED DATE	TIME	SAMPLE TYPE	CONTAINER(S)		REQUESTED ANALYSES	PRESERVATION
1		1A, 1B, 1C	5/31/07	0800	well water	3	1L amber glass	EPA 8081, EPA 8270	
2		2A, 2B, 2C	↓	0330	↓	3	↓	↓	
3		3A, 3B, 3C		0645		3			
4		6A, 6B, 6C		0030		3			
5									
6		1D, 1E, 1F	5/31/07	0800	well water	3	VOA vials	EPA 8260 - Volatiles	HCL
7		2D, 2E, 2F	↓	0330	↓	↓	↓	↓	↓
8		3D, 3E, 3F		0645					
9		6D, 6E, 6F		0030					
10									

CLIENTS PROVIDING SAMPLES TO THE LABORATORY SHOULD COMPLETE AS MUCH OF THE ABOVE FORM AS POSSIBLE. NOTE: NAME AND DATED SIGNATURE OF PERSON COLLECTING THE SAMPLE MUST BE ENTERED BELOW ↓. INFORMATION REQUESTED IN SHADED BOXES ABOVE TO BE FILLED IN BY THE LABORATORY.

SAMPLED BY: R. Bourke (PRINT NAME) DATE 5/31 2007
RELINQUISHED: M. Hasegawa (SIGNATURE) DATE 6/1 2007 TIME noon
COMMENTS:

RECEIVED BY: (SIGNATURE) DATE 20__ TIME
RELINQUISHED: (SIGNATURE OR INITIALS) DATE 20__ TIME
PRECAUTIONS:

RECEIVED FOR LABORATORY: ROGER MARTIN (CEL) (SIGNATURE) DATE 6/2 2007 TIME 10:00
RELINQUISHED: FED-EX (SIGNATURE OR INITIALS) DATE 6/2 2007 TIME 10:00
DISPOSAL:

USE (BLACK) INK

Samples are #1, #2, #3, & #6
the letters just differentiate each bottle!!

RETURN SAMPLE TO CLIENT ☐

07-06-0111

AECOS, Inc.

45-939 Kamehameha Highway Suite 104
Kaneohe, Oahu, HI 96744
Tel: (808) 234-7770 Fax: 234-7775

p. 2 of 2

SUB-- CHAIN OF CUSTODY FORM

PROJECT FILE No.: Kona 631
LOG NUMBER: [22866]

CLIENT: AECOS INC.
ADDRESS:
CONTACT: SNOOKIE MELLO
PHONE No.: ☎ (808)234-7770
Purchase Order No.:

☐ RUSH
☐ SEE REVERSE
SPECIAL INSTRUCTIONS

	☑	SAMPLE ID	SAMPLED DATE	TIME	SAMPLE TYPE	CONTAINER(S)		REQUESTED ANALYSES	PRESERVATION
1		~~2G~~ 1G	5/31/07		well water	1	500ml p	Priority Pollutant Metals + Silica	HNO3
2		~~2H~~ 1H	↓		↓	1	↓	↓	Filter + HNO3
3		2G				1			HNO3
4		2H				1			Filter + HNO3
5		3G				1			HNO3
6		3H				1			Filter + HNO3
7		6G				1			HNO3
8		6H				1			Filter + HNO3
9									
10									

CLIENTS PROVIDING SAMPLES TO THE LABORATORY SHOULD COMPLETE AS MUCH OF THE ABOVE FORM AS POSSIBLE. NOTE: NAME AND DATED SIGNATURE OF PERSON COLLECTING THE SAMPLE MUST BE ENTERED BELOW ↓. INFORMATION REQUESTED IN SHADED BOXES ABOVE TO BE FILLED IN BY THE LABORATORY.

SAMPLED BY: R. Bourke (PRINT NAME) DATE 5/31 2007
RELINQUISHED: M. Hasegawa (SIGNATURE) DATE 6/1 2007 TIME noon
COMMENTS:

RECEIVED BY: (SIGNATURE) DATE 20__ TIME
RELINQUISHED: (SIGNATURE OR INITIALS) DATE 20__ TIME
PRECAUTIONS:

RECEIVED FOR LABORATORY: (CEL) (SIGNATURE) DATE 6/2 2007 TIME 10:00
RELINQUISHED: FED-EX (SIGNATURE OR INITIALS) DATE 6/2 2007 TIME 10:00
DISPOSAL:

USE (BLACK) INK

For metals, 1G & 1H are separate samples.
There are a total of 8 (EIGHT) samples for metals!!
email us if you have ANY questions!!

RETURN SAMPLE TO CLIENT ☐

0111

AECOS, Inc.
(808) 234-7770
45-939 Kamehameha Hwy, #104
Kaneohe HI 96744

Subcontractor: CalScience

Requested By: ~~SNOOKIE~~ Ann MELLO
Date: 6/1/07

Results Requested By: normal TAT

	Log No.	Qty of Samples	Sample Type	Analysis Requested	Collection Information	Sample Preparation	# of bottles
1LAG 500ml 1LAG 250ml	22865	3	Stormwater	Ammonia, TKN	5/30/07	H_2SO_4	3
		3		TOC			3
1LAG		2		Oil + Grease DL ≤ 1mg/L			2
1LAG	22866	4	well water	Pesticides - EPA 8081	chill	5/31/07	4
1LAG		4	well water	SVOC - EPA 8270	chill		4
40ml vials		4	well water	~~SVO~~ VOC - EPA 8260	HCL		12
500ml poly		4	well water	Total Priority Pollutant Metals + Silica	HNO_3		4
500ml poly		4	well water	Diss. Priority Pollutant Metals + Silica	Filtered + HNO_3		4
1LAG		4	well water	Spare sample volume	chill		4

Notes/Special Instructions:
please send more bottles to replace these, in the coolers!! Mahalo nui loa!!
Anni

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 07 - 06 - 0111

Cooler 1 of 1
TOTAL OF 2 COOLERS

SAMPLE RECEIPT FORM

CLIENT: AECOS DATE: 6/2/07

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:
- ____ Chilled, cooler with temperature blank provided.
- ____ Chilled, cooler without temperature blank.
- ____ Chilled and placed in cooler with wet ice.
- ____ Ambient and placed in cooler with wet ice.
- ____ Ambient temperature.
- ____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):
- ____ °C Temperature blank.
- 4.0 °C IR thermometer.
- ____ Ambient temperature.

Initial: RW

CUSTODY SEAL INTACT:

Sample(s): ____ Cooler: ____ No (Not Intact): ____ Not Present: ✓

Initial: RW

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sampler's name indicated on COC	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers and volume for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: RW

COMMENTS: