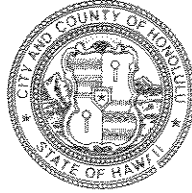


PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

September 3, 1998

Mr. Gary Gill, Director
Office of Environmental Quality Control
Central Pacific Plaza
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Gill:

Acceptance Notice for the Central Oahu
Regional Park - Final Environmental Impact Statement

We are notifying you of our acceptance of the Final Environmental Impact Statement (EIS) for the Central Oahu Regional Park as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

Pursuant to Section 11-200-23 (e), Chapter 200, Title 11 ("Environmental Impact Statement Rules") of the Administrative Rules, this Acceptance Notice should be published in the September 23, 1998 Environmental Notice.

We have attached our Acceptance Report of the Final EIS for the Central Oahu Regional Park. Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

Yours very truly,

A handwritten signature in cursive script, appearing to read "Patrick T. Onishi".

PATRICK T. ONISHI
Chief Planning Officer

PTO:lh

Attachment

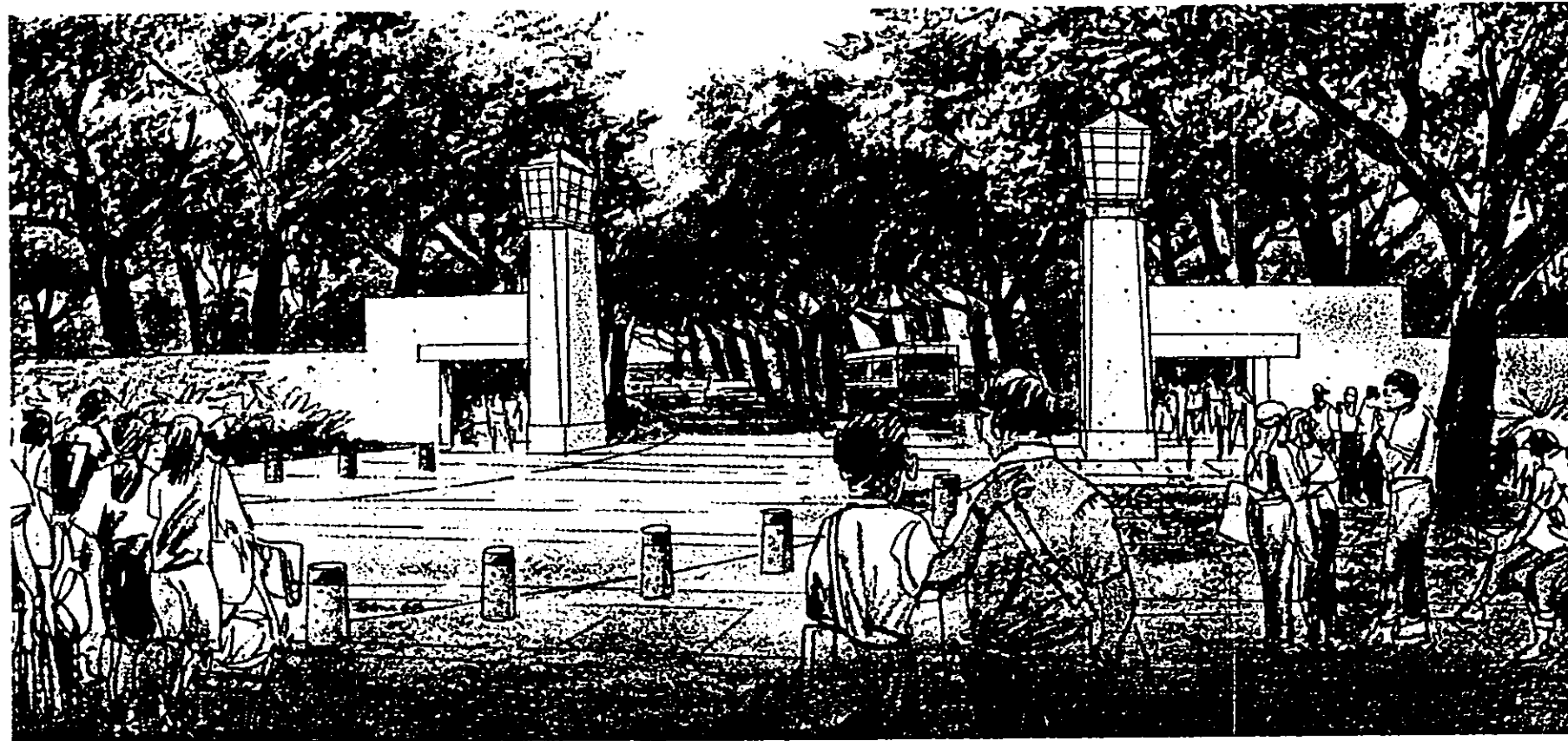
c: Department of Design and Construction
PlanPacific, Inc.

1998-Oahu-FEIS-
Central Oahu Park

FILE COPY

MAY 1998

CENTRAL OAHU REGIONAL PARK
FINAL ENVIRONMENTAL IMPACT STATEMENT

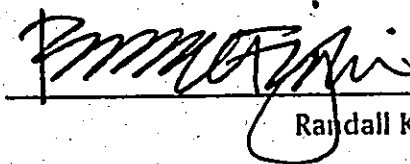


CENTRAL OAHU REGIONAL PARK
FINAL ENVIRONMENTAL IMPACT STATEMENT

PROPOSING AGENCY:
Department of Design and Construction, City and County of Honolulu

DOCUMENT PREPARER:
PlanPacific, Inc.

This Final Environmental Impact Statement and all ancillary documents were prepared under my direction or supervision and the information submitted, to the best of my knowledge, fully addresses document content requirements set forth in §11-200-17, HAR.



Randall K. Fujiki, AIA
Director

JULY 24, 1990

Date

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Please note that changes made to the text of the Draft EIS are distinguished by the dotted underline identifying new text, and the ~~strikeout~~ identifying deleted text.

Development Profile

Project Name: Central Oahu Regional Park

~~Waiola Regional Park and Sports Complex~~

Proposing Agency: City and County of Honolulu, Department of Design and Construction

Location: Waipio, Central Oahu. The project area is makai-ewa of the point at which Kipapa Gulch and Kamehameha Highway intersect

Tax Map Key: 9-4-05:74

Area: 269.454 acres

Present Use: Agriculture (Pineapple)

State Land Use District: Agricultural

Development Plan: Agriculture

Development Plan Public Facilities Map: Park

Present Zoning: AG-1, Restricted Agriculture

Landowner: Castle and Cooke, Inc. (City and County of Honolulu is in the process of acquiring the parcel.)

Identified Impacts: Potential project-related adverse impacts will include additional vehicular traffic with accompanying noise and air environment degradation, and the loss of agricultural lands.

Project Summary

PROJECT DESCRIPTION

The City and County of Honolulu is proposing to develop a regional park which includes a sports complex that, when fully developed, will consist of a variety of active recreational facilities, including: baseball, softball, soccer and multi-purpose fields, basketball and volleyball courts, a tennis complex, an in-line hockey complex, an aquatic center, a skateboard park, and a community center. The plan also calls for passive recreational areas, including a botanical garden, for picnicking, kite-flying, and pedestrian paths. Refer to Exhibit 3.

PROJECT PURPOSE AND NEED

Central Oahu and Ewa combined have been the island's fastest growing urban areas for the past two decades, with the population of Central Oahu about three times that of Ewa. Without this project, Central Oahu will be the only major growing population area without a regional park either presently in existence or in the planning and development stage.

The surrounding suburban residential communities are characterized by a larger proportion of households with children engaged in youth athletic leagues than are communities throughout Oahu. The proposed regional park would address the active recreation needs of the surrounding communities.

The proposed sports complex could also help to broaden the Oahu economy and strengthen the tourism industry by providing facilities to support sports tourism. Oahu currently lacks these types of facilities.

SIGNIFICANT IMPACTS AND PROPOSED MITIGATION MEASURES

Loss of Agricultural Land

The loss of the subject parcel from agricultural use will be permanent

and irreplaceable upon development of the proposed project. Although the site was once used for sugar cultivation and then later converted to pineapple cultivation, the project site is currently fallow. Conversion of the land to urban use will not affect overall agricultural production or jobs in the long term since sugar is no longer being cultivated on Oahu, and other surplus agricultural lands have been converted for pineapple cultivation. The site's proximity to the suburban communities of Central Oahu and its physical separation from other agricultural lands (due to Kipapa Gulch) make it an attractive open space buffer between residential communities and agricultural activities.

Traffic

Based on the traffic study conducted for the proposed project (see Appendix C), once completed, the new regional park will have an impact on traffic flow at the study intersections during projected peak hours. The intersections of Ka Uka Boulevard with Ukee Street, Kamehameha Highway with Lumiauau Street, and Lumina Street with Paiwa Street have sufficient capacity to meet increased traffic associated with the park. The following recommendations will minimize anticipated impacts at the other study intersections during the projected peak hours:

Kamehameha Highway with Ka Uka Boulevard

The addition of an eastbound leg at this intersection would result in reduced levels of service (LOS). However, with the recommended configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- An exclusive left-turn lane, a through lane and an exclusive

right-turn lane on the westbound leg of Ka Uka Boulevard.

- An exclusive left-turn lane, a through lane and a shared through and right-turn lane on the eastbound leg of Ka Uka Boulevard.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Kamehameha Highway with Waipio Uka Street

The addition of an eastbound leg at this intersection would result in reduced LOS. However, with the recommended configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- One shared through/right-turn lane with double left-turn lanes on the westbound leg of Waipio Uka Boulevard.
- One through lane with separate left- and right-turn lanes on the eastbound leg.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Kamehameha Highway with Lumiaina Street

Currently, motorists turning left from Lumiaina Street to northbound Kamehameha Highway experience long delays, LOS F conditions, during all three study periods (weekday peak morning, weekday peak afternoon, and weekend mid-day). This is caused by the heavy left-turn traffic volume. This LOS F condition will continue in the future with or without the project. A possible method to improve this condition would be to modify the signal timing to give more time to Lumiaina Street. Another method would be to separate the eastbound and westbound

phases along Lumiaina Street which would eliminate existing left-turn conflicts.

Kamehameha Highway with Waipahu Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Paiwa Street with Westbound Off-Ramp (Paiwa Interchange)

Currently, motorists turning right from the off-ramp to Paiwa Street experience LOS F condition during the afternoon and mid-day study periods. The observed maximum vehicle queue was 21 vehicles which was contained in the provided storage lane. Motorists would experience additional delays caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Paiwa Street with Eastbound Off-Ramp (Paiwa Interchange)

During the weekday morning and afternoon peak hours, motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

During the weekend mid-day peak hour, there are 449 left-turns being made from the eastbound off-ramp. Observed queues of 16 vehicles occurred several times during the peak hour. The Highway Capacity Manual states that double left-turns be considered when left-turn traffic volume exceeds 300 vehicles per hour.

With the project, the forecasted left-turn volume on the eastbound off-ramp is expected to increase to 645 vehicles. Although the level of service indicates LOS D, double left-turn lanes should be considered to reduce the possibility of vehicles queuing onto the freeway. Double left-turn lanes at this intersection can be accommodated within the existing right-of-way.

Since the recommendations are based upon probable day-to-day events, large events such as a major baseball game in the stadium, special traffic controls should be implemented if necessary. The traffic control could be similar to what is done for the Special Events Arena at the University of Hawaii and the Aloha Stadium. Examples of such controls include the use of traffic control personnel and coning. Another measure to assist and improve traffic flow is to locate most of the vehicular parking and all of the bus loading spaces adjacent and parallel to Kamehameha Highway, allowing convenient access to the arterial highway and the region's principal bus route.

In addition to the roadway improvements, the internal circulation plan will help disperse traffic during peak periods of park usage on weekends and during special events by allowing access to the main parking area fronting Kamehameha Highway from all three entries (at Ka Uka Boulevard, Waipio Uka Boulevard and Paiwa Street). However, a gate along the internal park circulation road near the main parking area will be closed to prevent use of park roads as a *de facto* through-route for traffic between Paiwa Street and Kamehameha Highway. In addition, the Paiwa Street access, although gated during most of the park's operating hours may be opened for special events and on weekends. Another measure to assist and improve traffic flow is to locate most of the vehicular parking and all of the bus loading spaces adjacent and parallel to Kamehameha Highway, allowing convenient access to the arterial highway and the region's principal bus route.

Soils

Because the proposed site was previously used for agricultural activities, herbicides and pesticides may be in the ground. Additionally, during preliminary geotechnical investigations for the proposed project, a transite pipe was found that is believed to contain asbestos. Construction and demolition debris, and municipal solid waste are also present at several areas of the site. Such waste may contain asbestos or other potentially hazardous materials. As part of the pre-construction activities for the proposed project, a survey was performed to assess the nature and quantity of potentially hazardous materials, including herbicides and

pesticides (see Appendix F.) The City and County will comply with any mitigation measures recommended in the report on this survey.

Noise and Air Quality

Due to the size of the park, and the types of activities that will take place, there will be periods when noise and artificial light will have a temporary impact on the environment. For this reason, the facilities likely to generate intensive noise or light have been sited within the interior or at the northern end of the parcel, away from residential areas. There will also be short-term impacts on both noise levels and air quality during the construction of the proposed project. The development will conform with all relevant state and local controls to minimize these impacts.

Water Consumption

The existing reservoir can meet the projected potable water demands. In the short-term, the Waipio Heights Wells II is available as a temporary source of irrigation water. For long-term irrigation water, the City and County will undertake the following approach:

- Apply to the Commission for allocation from the Waiahole groundwater "buffer."
- As back-up, also apply for a temporary groundwater allocation. Although a permanent allocation is unlikely, a temporary allocation may be possible.
- Design and construct the park's irrigation system to accommodate use of reclaimed water in the future, when more information and a source become available.

Scenic Views

Project development will alter views from Kamehameha Highway looking towards the Waianae Range. Existing overhead utility and communications lines through the site and along Kamehameha Highway will be rerouted underground to open up a panoramic vista of the mountains from the highway, below a canopy of trees and above a

landscaped berm in front of the proposed parking lots for the park (see Exhibit 16). Larger structures, such as the baseball and tennis stadiums and the community center, are sited within the interior of the park and will not be readily visible from the highway.

The park's development will also create significant viewing opportunities within the site that are presently not available to the public. Facilities that are lighted at night have been located and designed to minimize their visibility from residential areas. On balance, development of the project will result in a more visually appealing view of the Waianae Mountains from Kamehameha Highway, and an increase in vantage points for high quality views of the natural environment.

Employment Generation

The project will generate short-term employment during construction and long-term jobs when the facilities are in operation. The regional park will create public sector jobs for the maintenance of facilities and the administration and operation of public recreation programs. In addition, some of the sports facilities may generate both direct private sector employment and secondary employment by attracting professional training programs and sporting events.

Community Services

The project will require police and fire protection and emergency health services, as would any park and recreational complex designed for active use. In addition, additional security and medical assistance may be required for professional sporting events and training programs.

ALTERNATIVES CONSIDERED

Three alternatives to the proposed action were considered:

- No Project
- Other sites
- Regional Park with No Sports Complex

Evaluation of the alternatives indicated that the proposed site and Regional Park development would: (1) address the need for a regional park in Central Oahu; (2) provide the most physically suitable and accessible site for a regional park; and (3) accommodate passive and active recreational needs of the surrounding communities, as well as provide opportunities for professional sporting events and training programs.

UNRESOLVED ISSUES

The long-term source of irrigation water for the park will not be resolved until the State Commission on Water Resource Management has approved an allocation from one of the potential sources identified and discussed in this document.

COMPATIBILITY WITH LAND USE PLANS AND POLICIES

The proposed development is consistent with relevant public goals, objectives, policies, plans and controls. However, a petition to the State Land Use Commission for an Urban District boundary amendment for the site will be requested for the full implementation of the conceptual master plan for the park because the intensity of recreational use for some of the proposed sports facilities is more characteristic of urban areas rather than agricultural areas. Either a Special Permit or a Land Use District Boundary Amendment may be required for portions of the proposed sports complex. The City and County are consulting with the State Land Use Commission and the Office of Planning.

NECESSARY PERMITS AND APPROVALS

The Central Oahu Development Plan Public Facilities Map has already been amended to reflect the proposed project. The City Council has also authorized the acquisition of the land for the project and the budget for project planning. At this time, it appears that the following permits or other approvals will or may be required to implement the proposed project:

Type of Approval or Permit	Project Element
State Land Use Commission State Land Use Commission Urban District Boundary Amendment	A Boundary Amendment will be required to implement phases of park development involving major sports facilities, such as the proposed baseball and tennis stadiums and the aquatics center.
State Commission on Water Resources Management/ Board of Water Supply/State Department of Health Water Use Permits in Water Management Areas and/or Well Construction Permit	Permission from the Commission on Water Resources Management will be required for a long-term irrigation water source – i.e., Waiahole Ditch water, groundwater development, or reclaimed wastewater. Use of reclaimed wastewater will also require approval of the Department of Health, Board of Water Supply and Department of Wastewater Management.
City Council/Mayor Budget request for project construction and future phases of development	Entire project (although some of the sports facilities are expected to be built with private funds)
Department of Planning and Permitting Grading Permit	All site work within the project area
Department of Planning and Permitting Building Permit	All structures within the project
Department of Planning and Permitting Storm Drain Connection Permit	Connections to the existing storm drain system to serve the project
Department of Environmental Services Sewer connection permit	Connections to the municipal sewer system to serve the project
State Department of Transportation Permits to connect to and perform work with a state highway	Connections to and improvements within the right-of-way for Kamehameha Highway

1. Project Description

1.1. LOCATION AND SIZE

The site consists of approximately 269 acres in the southern portion of the central plateau, which lies between the Koolau and the Waianae mountain ranges. It is bounded by Kamehameha Highway (adjoining the Waipio suburban community) to the east; Kipapa Gulch and the Waikele Branch, Naval Magazine, Lualualei to the west; and the Waikele suburban community to the south (Exhibit 1).

1.2. EXISTING USE

Although previously used for sugar cultivation and then later converted to pineapple cultivation, the project site is currently fallow, with few structures above grade. A portion of the stone-lined Waiahole Irrigation Ditch cuts diagonally across the northern portion of the property. An overhead 46Kv subtransmission power line follows a similar alignment. The Board of Water Supply maintains two reservoir tanks on the northwest edge facing Kipapa Gulch, and plans to construct a well near Kamehameha Highway where it intersects with Waipio Uka Street (see Exhibit 2).

1.3. SURROUNDING USES

The proposed project site is surrounded by Kipapa Gulch and agricultural fields to the west and north. Further north is the Mililani community. To the east of the site, across Kamehameha Highway, are the Waipio and Crestview communities. The Waikele community lies to the south of the site.

1.4. PROPOSED PROJECT AND PROJECT OBJECTIVES

The proposed regional park will help address the recreational needs of Central Oahu and Ewa, which combined, have been the island's fastest

growing urban areas. The proposed project would also address the active recreation needs of the immediate surrounding communities, which are characterized by a larger proportion of households with children engaged in youth athletic leagues than are other communities throughout Oahu.

The site, when fully developed, will consist of a regional park and sports complex equipped with a variety of recreational facilities. It is planned to include a professional quality baseball complex for training and tournaments; softball, youth baseball, soccer and multi-purpose fields; basketball courts and sand volleyball fields; a championship tennis complex with center court and 24 tennis courts; a community center and an aquatic center with Olympic-sized swimming and diving pools; a four-field in-line hockey complex; a box car racing track; and skateboard park. Exhibit 3 depicts the conceptual master plan. Exhibit 4 summarizes the allocation of land for the various facilities and areas reflected in the conceptual plan.

The City and County proposes to acquire the land and provide the necessary on-site and off-site improvements. Private funds will be used to construct some of the athletic facilities in the sports complex, primarily the baseball stadium, the aquatic center, and the tennis complex.

1.5. RELATED PROJECTS

In addition to the Central Oahu Regional Park, the City and County has launched the planning, design and construction of the Waipio Peninsula Soccer Park. This Soccer Park is also located in Central Oahu, just south of Waipahu Town. It was planned in conjunction with the Central Oahu Regional Park to provide a venue for local, national and international soccer players to train and compete year-round. In contrast, the soccer/multi-purpose fields of the Central Oahu Regional Park serves multiple activities and is primarily for the use of nearby local residents.

Another related project is the Kapolei Sports and Recreation Center planned by the State. This recreation center is located in Ewa and focuses on professional baseball training. Should this project materialize, plans for the Central Oahu Regional Park baseball complex may be adjusted.

1.6. DEVELOPMENT SCHEDULE AND ESTIMATED COSTS

The project site is proposed to be developed in four overlapping phases over a period of approximately six years. The southern portion of the park will be developed first, beginning in the vicinity of the Waipio Uka Boulevard intersection (see Exhibit 5). The central portion, up to the Ka Uka Boulevard intersection, will be developed second, with the exception of a portion near the Paiwa Road entrance, which will be developed third. The northern portion will be developed in the final phase. Full development of some of the sports facilities may occur beyond the six-year timeframe, depending on the availability of public or private financing.

Development of the project phasing plan was based on priorities set by the City in line with the projected available budget. Exhibit 5 shows the project area by phase and the timeframe for completion of each phase is outlined on the following table:

Phase/Area	Elements	Duration (Approx.)
Phase 1 88 acres	Concession Building, Comfort Station, Maintenance Facility, Entrance at Waipio Uka, Pro Baseball Complex (except Stadium), Practice Infield, Soccer Fields (2), Multi-purpose Field, Box Car Racing Track*, Parking Lot, Nursery, Park, Walkways, Roads, Landscaping, and Water Reservoir	19 mos
Phase 2 107 acres	Baseball Stadium*, Tennis Complex*, Comfort Stations (2), Concession Building, Entrance at Ka Uka and Paiwa, Youth Baseball Fields (4) with Bleachers, Tot Lot, Parking Lot, Park, Walkways, Roads, Landscaping, and Water Reservoir	31 mos

Phase/Area	Elements	Duration (Approx.)
Phase 3 32 acres	Concession Building, Comfort Station, Softball Fields (4) with Bleachers, Parking Lot, Park, Walkways, Roads, and Landscaping	22 mos
Phase 4 38 acres	Community Center, Aquatic Center*, Field House, Training Center, Comfort Station, Skateboard Park, In-Line Hockey*, Basketball Courts (4), Sand Volleyball (3), Parking Lot, Park, Walkways, Roads, and Landscaping	29 mos

*To be developed by private developer through RFP.

Below is a preliminary estimate of project development costs:

Component	Est. Cost (Millions)
Site Improvements (grading, landscaping, irrigation, paving for roads, parking and walkways/ bikeways, grassed playfields, architecture)	\$34.0
Utilities (Off-site water reservoir and transmission lines, on-site potable water lines, off-site and on-site electric lines and lighting, sewer lines, storm drainage, possible undergrounding of overhead powerlines)	\$15.4
Feature Sports Facilities (Baseball stadium, tennis courts, in-line hockey, skateboard bowls, boxcar raceway, community center, field house, aquatic center)	\$16.9*

*Cost will vary greatly as actual funding for many facilities will be determined by private developer(s).

EXHIBIT 1
Location Map

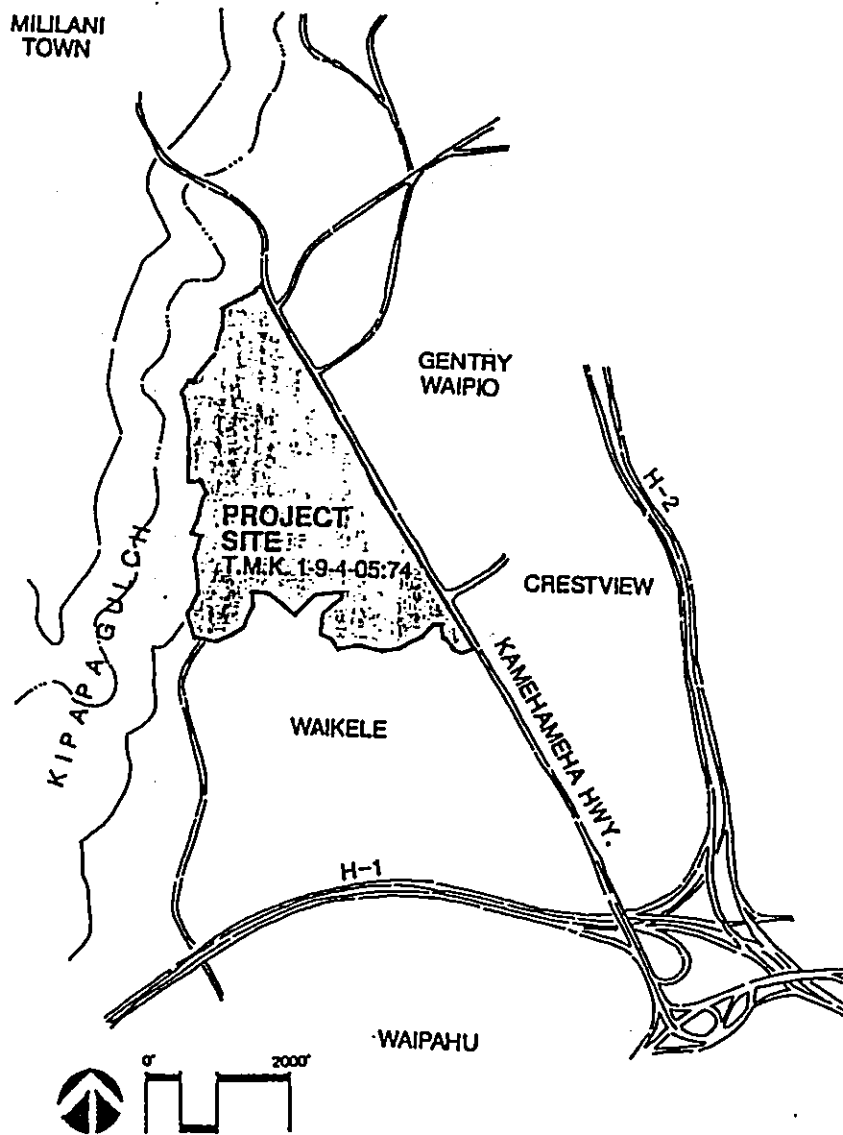
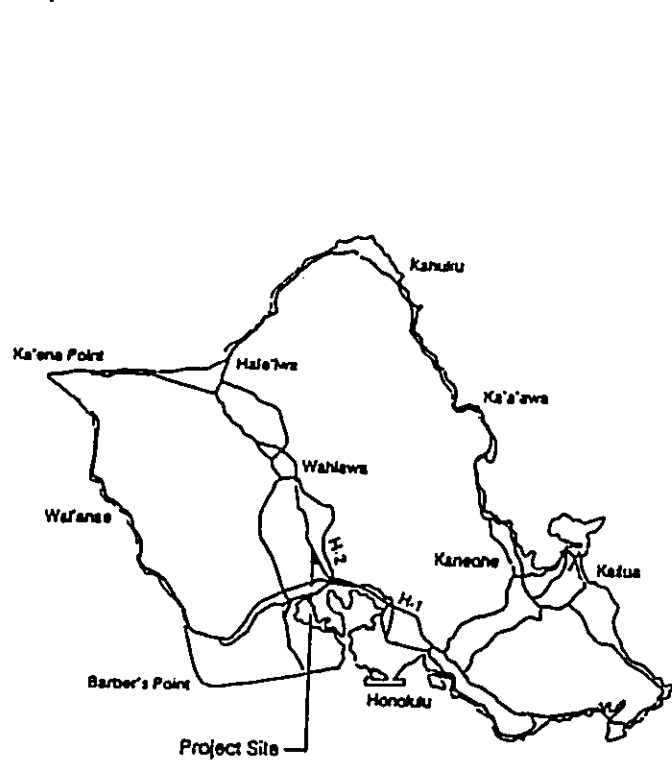


EXHIBIT 2
Site Conditions

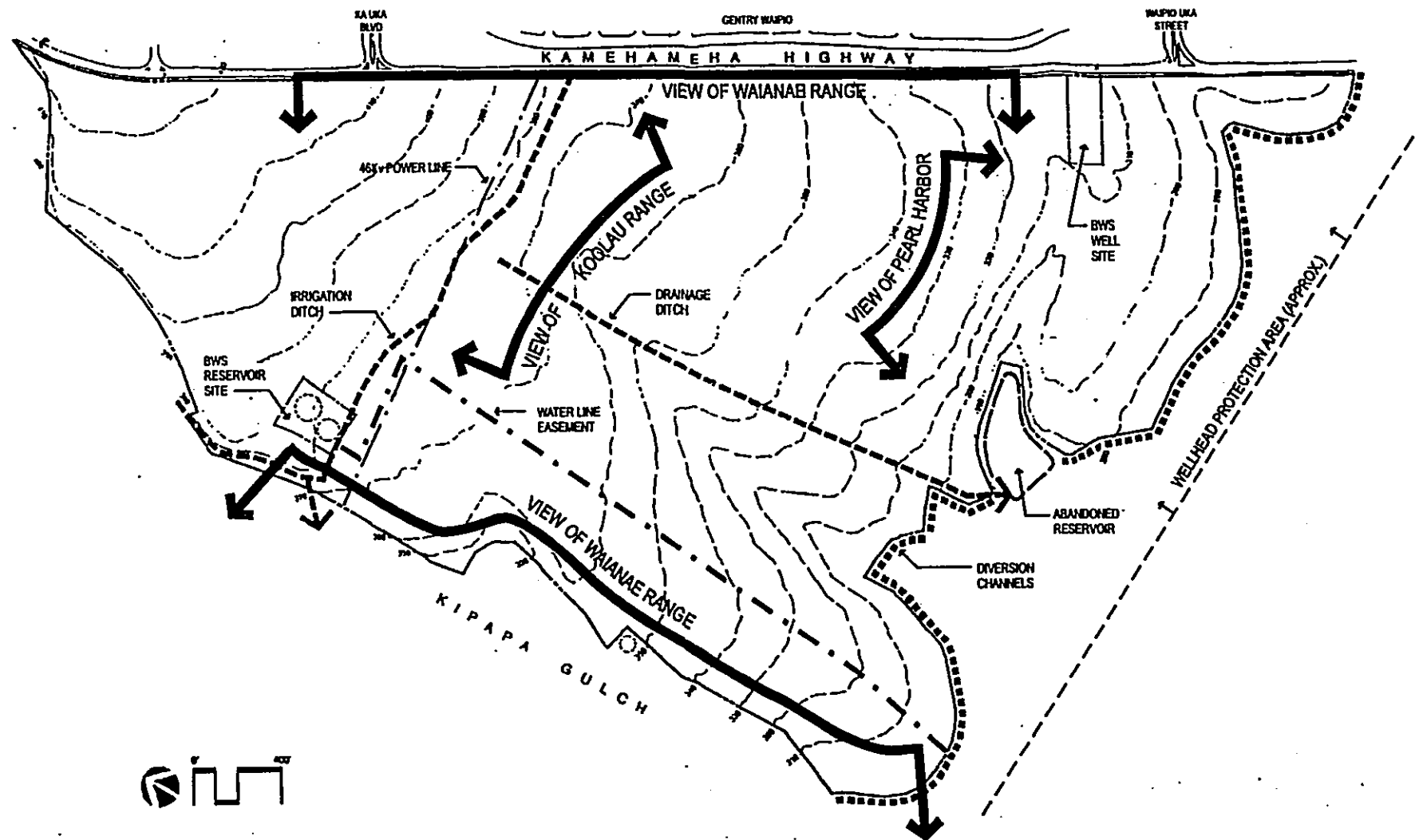


EXHIBIT 3
Conceptual Master Plan

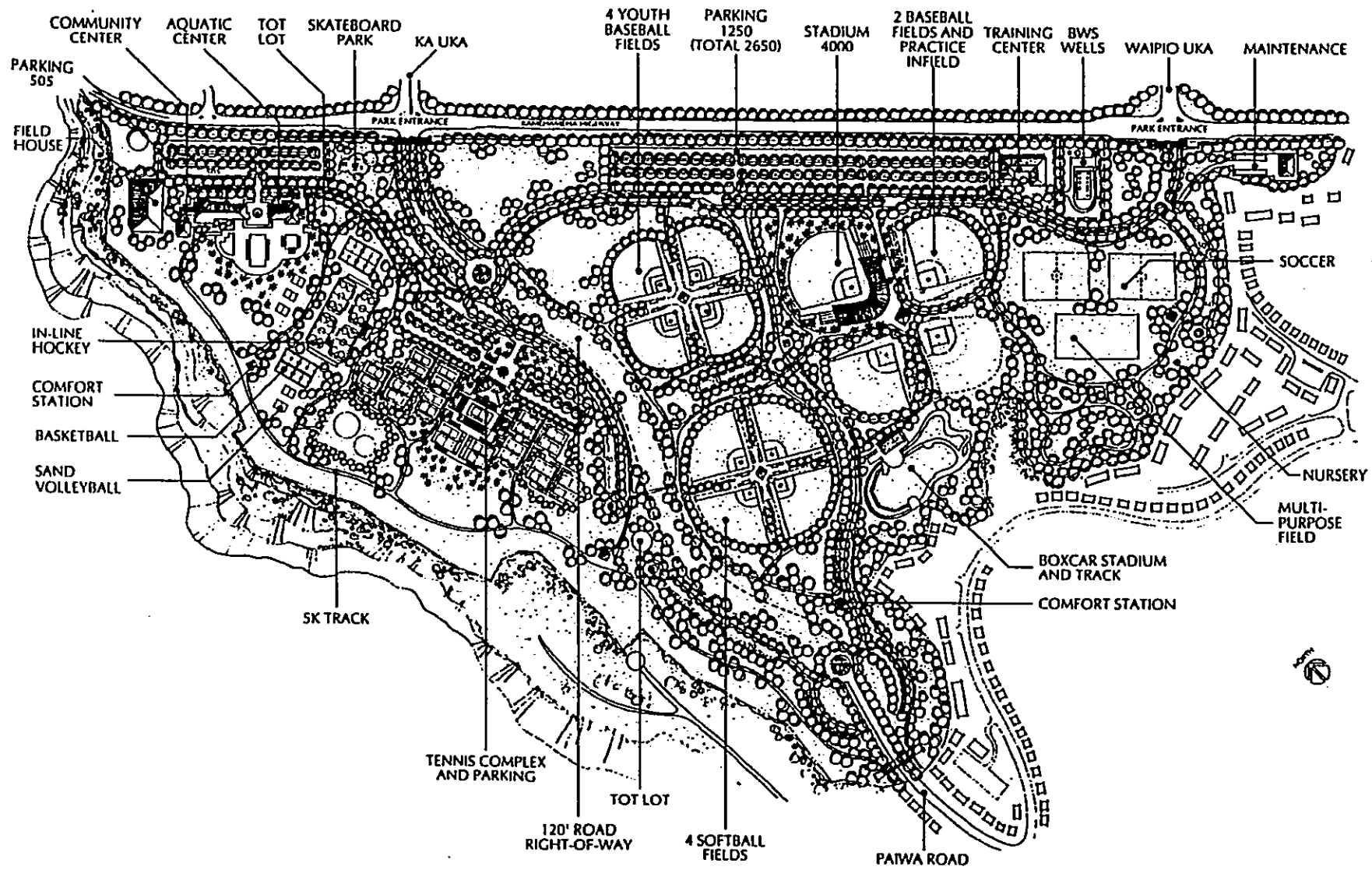
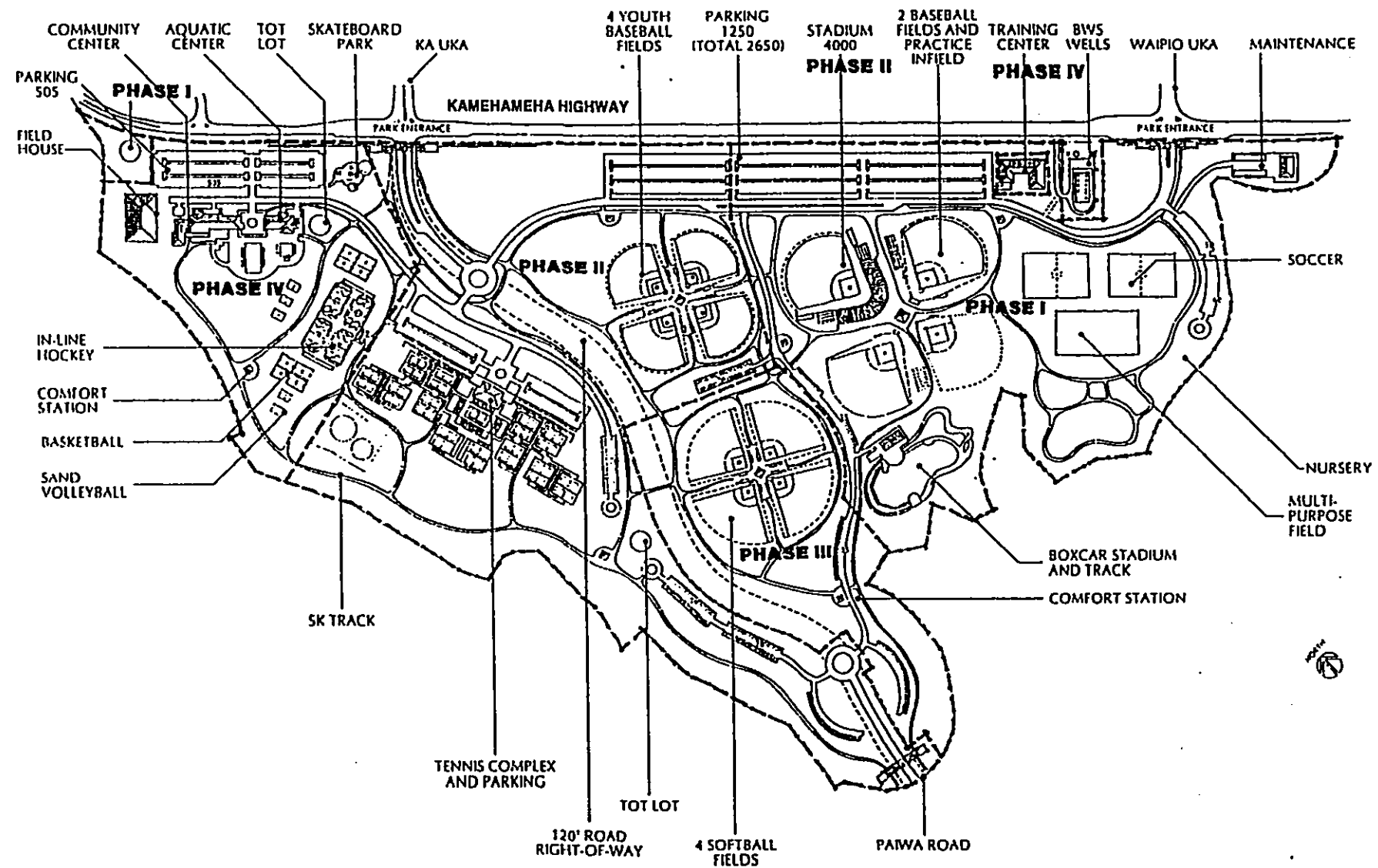


EXHIBIT 4

Proposed Use Allocations for Facilities and Areas

Facility or Area	Description
Aquatic center	Three pools, all with night-lighting; one designed to Olympic and NCAA standards; a diving well with diving platforms and 25-meter lanes; a children's pool and wading area; and a 8,500 sf aquatic center building with offices, restrooms, showers, lockers, training and weight rooms, pool maintenance facilities and storage.
Baseball/softball facilities	Twelve ball fields: a 4,000-seat baseball stadium with night-lighting; two lighted fields designed to professional baseball standards; one practice infield (unlighted); four youth baseball fields (unlighted); four softball fields (two lighted).
Basketball/volleyball courts	Eight hard courts for basketball (lighted); five sand fields for volleyball.
Bicycle/pedestrian paths	An interconnected pathway system with a 6-ft wide pavement designed to accommodate both bicyclists and walkers and serve as a 5k running course.
Boxcar racing track	Stadium consisting of a 25-ft high launch ramp and 1,000-ft long racetrack with under/over features.
Community center	A 20,000 sf building with a pre-function lanai, multi-purpose hall, kitchen facilities, senior center, child care center, storage rooms and park offices.
Field house	Gymnasium containing one full-sized basketball court and cross courts which can be used for either three basketball courts or six volleyball courts; fold-out bleachers with seating capacity for 1,500; two racquetball courts; lockers/restrooms/concession area; offices and storage.
Future through-road	A 120-ft wide easement (alignment shown on Exhibits 1 and 2) for the planned extension of Paiwa Street: road will have a parkway design, with a generously landscaped median and separated bikeways/walkways straddling either side.
In-line hockey rinks	Four paved rinks with night lighting and accessory facilities.
Parking and internal circulation roads	Paved, marked stalls for about 2,674 cars; loading areas for buses. (Additional parking capacity can be provided on grassed fields for approximately 1,000 cars during major spectator events, if necessary.) Two-lane roadways, with routes as shown on Exhibit 2.
Passive recreation and landscaping	Approximately 49 acres for picnicking, kite-flying, walking, jogging and similar activities; an additional 174 acres of unassigned landscaped area for aesthetic purposes and to serve as a buffer between active recreational uses and residential areas.
Skateboard bowls	Various in-ground concrete bowls and aboveground ramps, with night lighting.
Soccer/multi-purpose fields	Two soccer fields; one multi-purpose field for football or soccer (all unlighted).
Support facilities	Five free-standing comfort stations at various locations; three free-standing concession stands with public restrooms; a park maintenance building and yards, and a 2-acre plant nursery; water supply wells and storage tanks along Kamehameha Highway and Kipapa Gulch frontages.
Tennis facilities	Twenty-five courts, all with night-lighting: a 1,000-seat stadium court, with option to expand to 3,000 seats, four show courts (covered), with 500 seats per court; four clay or fast-dry softcourts; sixteen standard courts; a 6,400 sf tennis facility building, with a clubhouse and offices.
Tot lots	Two tot lots with play equipment for children ages 2 to 12; one located near the aquatic center and the other in the passive recreations area west of the future through-road easement.
Training facilities	Building with weight-training facilities, lockers, showers, meeting rooms and offices.

EXHIBIT 5
Development Phasing Plan



1.7. CHANGES IN LAND USE DESIGNATION REQUIRED TO IMPLEMENT THE PROJECT

~~A change in the State Land Use District will be required for implementation of the phases of the conceptual master plan involving major spectator and competitive sports facilities. The State Land Use Commission has agreed that Phase 1 -- consisting of the construction of grassed play fields, landscaping, parking spaces, access road, and small support buildings -- can proceed prior to the approval of the Urban District boundary amendment because these improvements are consistent with the uses which are permitted in the Agricultural District pursuant to Chapter 205-4.5(6), Hawaii Revised Statutes. may be required for portions of the proposed sports complex. The City and County are consulting with the State Land Use Commission and the Office of Planning. Results of this consultation will be included in the Final EIS. If necessary, a Special Use Permit or Land Use District Boundary Amendment will be submitted to the Land Use Commission.~~

1.8. ALTERNATIVES TO THE PROPOSED ACTION

The following alternatives to the proposed project were considered.

1.8.1. No Project

If the project is not implemented, the land could remain as unused agricultural land for a somewhat longer period of time. It is unlikely, however, that the lands will be re-used for pineapple production. With the cessation of sugar cane cultivation on Oahu, some of the sugar cane lands can and have already been converted to pineapple production. As a result, the supply of such lands greatly exceeds the demand for pineapple cultivation.

In addition to the uncertainty associated with continued agricultural use on the project site, the State and the City have recognized the rapid growth of the region and have, over the years, proposed various types of urban uses for the site, including park use. Combined, Central Oahu and Ewa have been the island's fastest growing urban areas for the past two

decades, with the population of Central Oahu about three times that of Ewa. If this project were abandoned, Central Oahu would be the only major population area without a regional park either presently in existence or in the planning and development stage.

1.8.2. Other Sites

There are other sites in Central Oahu that could be developed as a regional park, but both the State and the City have identified this particular site as the most suitable location for such a park.

The proposed site is centrally located within the region and easily accessible via Kamehameha Highway from all of the major communities within the region. Only Village Park and Royal Kunia have a rather indirect route to the site, although a shorter route, from these two communities and the Waikele community to the south, can provide a second access to the site via Paiwa Street.

The site also has physical features that are ideal for park use, such as level terrain, which is particularly important for an active park that includes extensive athletic fields and playcourts. The views from the site, particularly along Kipapa Gulch, also encourage more passive uses of the park, such as picnicking, walking, and bicycling.

Finally, Kipapa Gulch serves as an excellent natural boundary between the urbanized area of Central Oahu and the agricultural fields beyond. The park itself serves as a transitional use between residential communities and actively cultivated agricultural lands.

1.8.3. Regional Park with No Sports Complex

The project could be planned as a regional park without major sports facilities. However, the site is significantly larger in land area than all but one of the regional parks that the City has developed. That park -- Koko Head Regional Park -- includes major natural features (i.e., Koko Head and Koko Crater) which consume most of the land area but function more as scenic objects than recreation resources. The Central Oahu

Regional Park site, on the other hand, does not include such features, since Kipapa Gulch is beyond the parcel boundary. As a result, there is ample space available to accommodate the passive recreation areas and the active sports facilities typically found in a regional park, as well as dedicate significant remaining area for sports facilities of a more specialized nature.

A residents' survey conducted for the State's 1995 feasibility study for the Central Oahu Regional Park found that "Waiola area residents are more eager than Oahu residents as a whole to use Waiola Park [i.e., Central Oahu Regional Park] for sports."¹ The reason attributed to this is the demographic profile of the surrounding suburban residential communities, which are characterized by a larger proportion of households with children engaged in youth athletic leagues than are communities throughout Oahu. Since the regional park is intended to serve primarily the surrounding community, it is appropriate to place more emphasis on active recreation facilities in this park.

The introduction of sports facilities designed to accommodate professional training programs and events provide several advantages for the development of the park, for both the surrounding community and the island as a whole. First, private-sector participation in the cost of these facilities, through either leasing agreements or direct contributions to development, enables the inclusion of higher quality facilities than would otherwise be possible. While the use of these facilities may be dedicated for use by professional athletes part of the time, they will also be available to the public for a good portion of the year. Second, it will increase opportunities for local residents to observe and perhaps to participate in professional sporting events and training programs. Third, private sector funding will enable earlier implementation of park development in light of the City's (and State's) continuing budget constraints. Finally, professional sports programs and events will stimulate the economy islandwide and create new job opportunities in the

¹ Mattson Sunderland, Survey of Oahu Resident Activities and Opinions to Support the Waiola Regional Park Development Plan, November 1994, p. 1.

region.

1.9. PHYSICAL ENVIRONMENT

1.9.1. Topography/Slope

The site pitches gently downward from the north, with elevations ranging from approximately 430 feet above mean sea level at the northern tip to 285 feet in the southern portion of the property. The slope averages about 2.5 percent and is rather uniform, except for a few natural drainageways (see Exhibit 2).

1.9.2. Soils

The project area is underlain by soils consisting of silts and clays of the Molokai Soil Series, in a classification known as Molokai silty clay loam (MuB).² This soil type is generally found in nearly level to moderately steep lands with elevations ranging mainly from near sea level to 1,000 feet. It is a well-drained soil formed in material weathered from basic igneous rock. Stormwater runoff is typically slow and the erosion hazard slight. Soil permeability is moderate.

The U.S. Soil Conservation Service crop classification for soils on this site are IIe and IIIe, if irrigated. Under this rating system the highest productivity rating is I and the lowest is VIII. The crop classification scores indicate that the land has moderate to severe limitations that reduce the choice of crops or that require moderate or special conservation practices. According to the Land Study Bureau classification system, the site has overall productivity ratings of A82i and B83i. "A" is the highest rating for lands suitable for agricultural production while the "B" rating signifies some limitations.

The soils encountered at the site generally exhibit high densities and

² U.S. Soil Conservation Service, *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii*, August 1972.

relatively low moisture contents. It should be noted that the upper 12 inches of the soil mantle are relatively loose due to constant reworking of this layer for agricultural purposes. Significant roots and organic material extend to no more than 12 inches below the ground surface.

Because the proposed site was previously used for agricultural activities, large quantities of herbicides and pesticides were used and may still be in the ground. Additionally, during preliminary geotechnical investigations for the proposed project, a transite pipe was found that is believed to contain asbestos. The observed section of pipe measured approximately 15 feet in length and was lying on the ground. Other transite pipes may be present at the site. Construction and demolition debris, and municipal solid waste are also present at several areas of the site. A mitigation plan for the handling and removal of these materials is provided in Appendix F.

1.9.3. Climate

The mean rainfall at Waipahu, the nearest monitoring station, is approximately 30.5 inches per year. The months of May through October are normally dry. The median monthly rainfall during these months is less than 1.4 inches.

The predominant wind direction and higher wind speeds are from a northeast to east direction. Average wind speeds are five to 15 miles per hour. Storms typically occur during the winter and approach from the south or southeast.

A night-time loss of tradewinds in the area combined with dewfall on approximately 70 percent of the nights contribute to conditions conducive to the attraction of mosquitos.

The median annual temperature is 82.6°F, with moderate seasonal and diurnal variation, typical of Hawaiian settings at this elevation.

1.9.4. Water

Groundwater resources in the area are listed as being in the Pearl Harbor aquifer system of the Waipahu and Waiawa aquifer sector. According to Mink and Lau, two aquifers underlie the site. The first aquifer is located beneath the majority of the site and is part of the Waipahu aquifer sector. The second aquifer is located beneath the southeast tip of the site (approximately 0.2 acres) and is part of the Waiawa aquifer sector. Both aquifers are listed as unconfined (where the water table is the upper surface of the saturated aquifer), basal (fresh water in contact with seawater) and occurring in flank lavas. The aquifers are described to be currently in use as fresh drinking water sources, and are listed as having a high vulnerability to contamination and being irreplaceable.

Groundwater development of the Pearl Harbor Aquifer is at or near its sustainable yield, and as a result, under the control of the State of Hawaii Department of Land and Natural Resources (DLNR), Commission of Water Resource Management. Results of a recent study conducted by the U.S. Geological Survey, in cooperation with the City and County Board of Water Supply (BWS), indicate that additional groundwater withdrawals and the reduction of groundwater recharge from agricultural operations may reduce the water levels. Given this, the Commission is currently re-examining the aquifer's sustainable yield.

Potable Water

The proposed project is within the 595' Reservoir Service Area. The on-site potable water distribution system will connect to the existing 12" water lines on the east side of Kamehameha Highway, opposite the project site (see Exhibit 7). One line is under Ka Uka Boulevard; the other is under Waipio Uka Street. The projected demands for potable water, by development phase are presented in Exhibit 6. According to BWS, the existing reservoir can meet the projected potable water demands.

EXHIBIT 6
Projected Potable Water Demands, by development phase

Phase	Demand (gallons per day)
Phase I	2,700
Phase II	4,500
Phase III	1,600
Phase IV	5,300
TOTAL	14,100

Nonpotable Water – Short term availability

BWS Rules and Regulations require the use of nonpotable water as the first option for irrigating large landscaped areas, if a suitable supply is available. In the short-term, the Waipio Heights Wells II is available as a temporary source of irrigation water. The wells are located on the east side of Kamehameha Highway, just north of Ka Uka Boulevard.

Although BWS has a water use permit for 500,000 gallons per day from these wells, the pesticide levels are too high for potable water use. While BWS does not presently have the means to treat the water, treatment works is currently in design. Once completed, BWS will use the Waipio Heights Wells II for potable water. Completion of the treatment work is estimated to take about three years. Until then, since the current water quality is adequate for irrigation purposes, the water is available for park use.

Nonpotable Water – Long term availability

Although short-term nonpotable water is available, a long-term source of water for park irrigation is needed. In February 1998, Masa Fujioka & Associates conducted a study to evaluate possible nonpotable water resources for the proposed development. Following is a summary of the

available resources and recommendations. A complete copy of the evaluation is included in Appendix A.

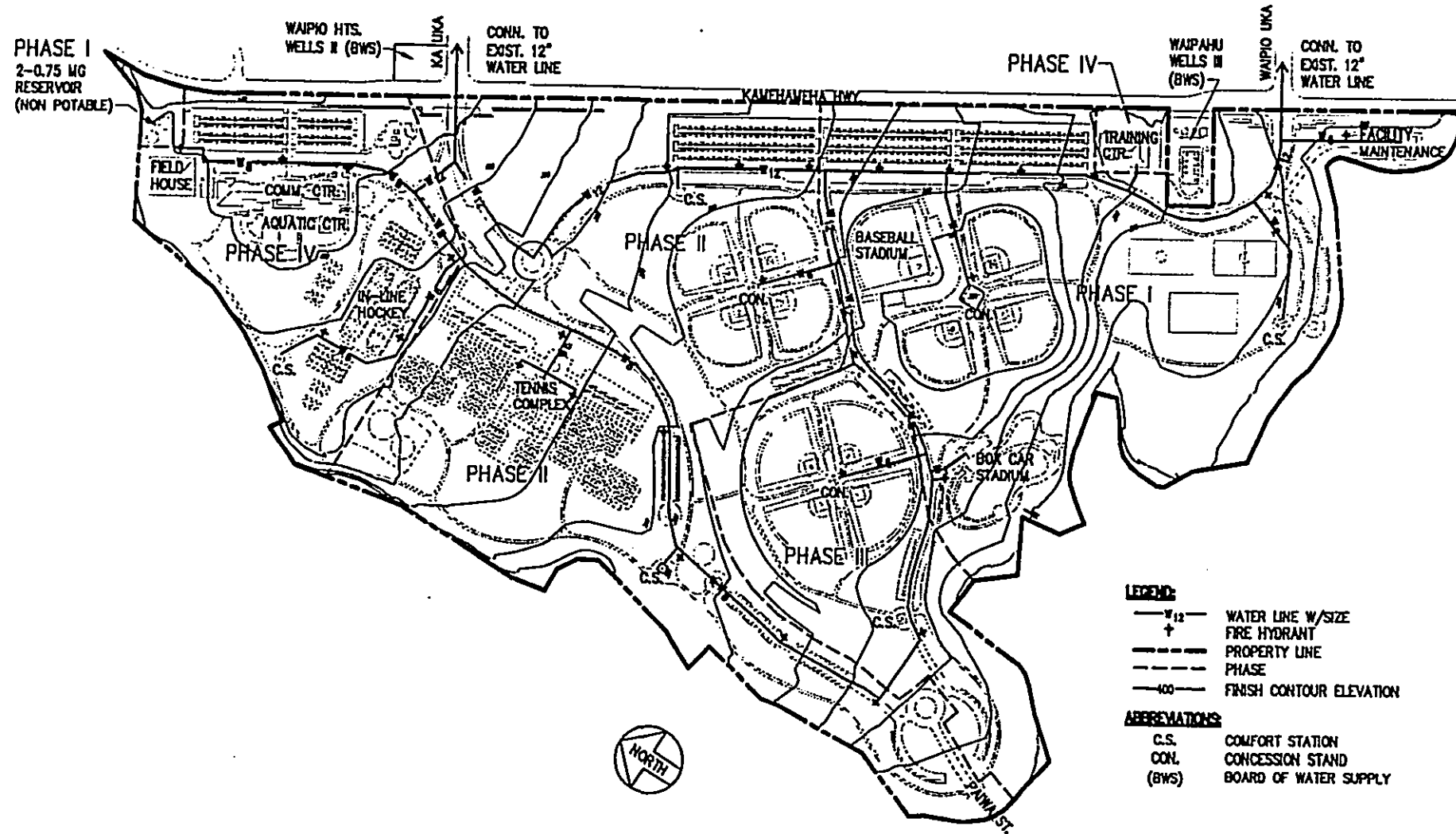
Waiahole Ditch Water

The Waiahole Ditch system develops an average of about 27 million gallons of water per day (MGD). The State of Hawaii Department of Land and Natural Resources (DLNR), Commission of Water Resource Management is responsible for allocating this water. In its recently released final decision, the Commission allocated 11.93 MGD to water use applicants. In addition to this allocation, the Commission set aside 5.39 MGD as a "non-permitted groundwater buffer" that may be diverted to the Leeward area for beneficial uses, subject to a Water Use Permit. Based on discussions with DLNR, a regional park would likely be considered a beneficial use and could be a recipient of a portion of the "non-permitted groundwater buffer." According to preliminary calculations, the proposed development will require 0.73 MGD for irrigation of 180 acres.

Existing Agriculture Allocations of Waiahole Ditch Water

A portion of Waiahole Ditch water currently allocated to Oahu Sugar Company (OSCO) or Dole/Castle & Cooke could be transferred to the proposed development. The possibility of acquiring a portion of OSCO's allocation, however, is considered a "long-shot" since the proposed site is not currently an OSCO site. With regard to Dole/Castle & Cooke's allocation, under the Commission's final decision, the company received 2.12 MGD for 1,552 acres of agricultural land. While it is unclear how much or if any of this allocation was intended for irrigating the proposed development site, even if the subject site's 269 acres were to receive a proportionate share of the total water allocated for 1,552 acres, the site's portion would amount to about 0.37 MGD. This figure would be insufficient for the proposed development, which, based on preliminary calculations, will require 0.73 MGD for irrigation.

EXHIBIT 7
Water Master Plan



There is also some uncertainty regarding whether the Commission would allow the water to be transferred for the proposed use. The Commission has already ruled that conversion from agriculture to golf course use would be a change in use and would, therefore, require a permit application. It has not, however, made such a determination on the conversion from agriculture to park use.

Groundwater Development

There are approximately 55-60 MGD of OSCO groundwater allocations that are nearing forfeiture as a result of non-use, with about one-third to one-half of this allocation to be made available in 1999. However, there is also a long list of applicants for this water and, based on discussions with DLNR, the Board of Water Supply has applied for almost all of the water and will likely be given first priority. Given this and the fact that the Commission is currently re-examining the aquifer's sustainable yield, the likelihood of obtaining permission to install and permanently operate wells at the site is low. It may be possible, however, for the City and County to have temporary use of the groundwater since BWS' request for the OSCO allocation is at least partly based on future growth projections.

Reclaimed Water – Tertiary Treated Effluent

Use of reclaimed water is subject to State Department of Health (DOH) "Guidelines for the Treatment and Use of Reclaimed Water" and BWS Rules and Regulations. DOH guidelines specify that R-1 (tertiary-treated) water may be used for irrigation of parks, elementary school yards and athletic fields. However, R-1 water is not currently available from Oahu's wastewater treatment plant sources. In addition, BWS objects to the use of reclaimed water over potable aquifers until more information is obtained about the potential effects of reclaimed water recharging the aquifer. Should additional information become available in the future supporting the use of reclaimed water, a source would need to be identified and infrastructure to support and transport the water to the site would need to be designed and built.

1.9.5. Flood Hazards

According to the U.S. Department of Housing and Urban Development Flood Insurance Rate Map, Panel 110, the project site is in Zone D – area of undetermined but possible flood hazards. While there are areas on the site in which ponding occurs during heavy rains, this condition dissipates rather rapidly due to the combination of sloping topography and moderate soil permeability.

1.9.6. Drainage

According to a drainage and surface water study conducted in 1998, stormwater runoff flows overland from the project site to Kipapa Gulch to the west (see Appendix B for a complete copy of the study). A lined diversion ditch, built as part of the Waikele community development to protect the residential development, is located along the site's southern boundary. This ditch discharges into the existing storm drain system down Paiwa Street.

A retention basin lies immediately south of the project site. The basin was previously used as an irrigation reservoir to store water from the Waiahole water system. It is currently under the control of Waikele Golf Club, Inc. Overflow from the basin enters the golf course storm drain system through an inlet on the north side of Lumiauu Street. It is presently functioning as a siltation basin and may be used as a siltation basin during construction as well as on a permanent basis for stormwater runoff from the proposed site. Special arrangements must be made between the City and County and Waikele Golf Club, Inc. for any future use of the retention basin. Stormwater runoff from the southernmost drainage basin enters an existing storm drain system in the adjacent residential development.

Exhibit 10 presents projected drainage runoff as a result of the proposed project. The existing and proposed surface water drainage system is depicted in Exhibit 8.

EXHIBIT 8
Drainage Master Plan

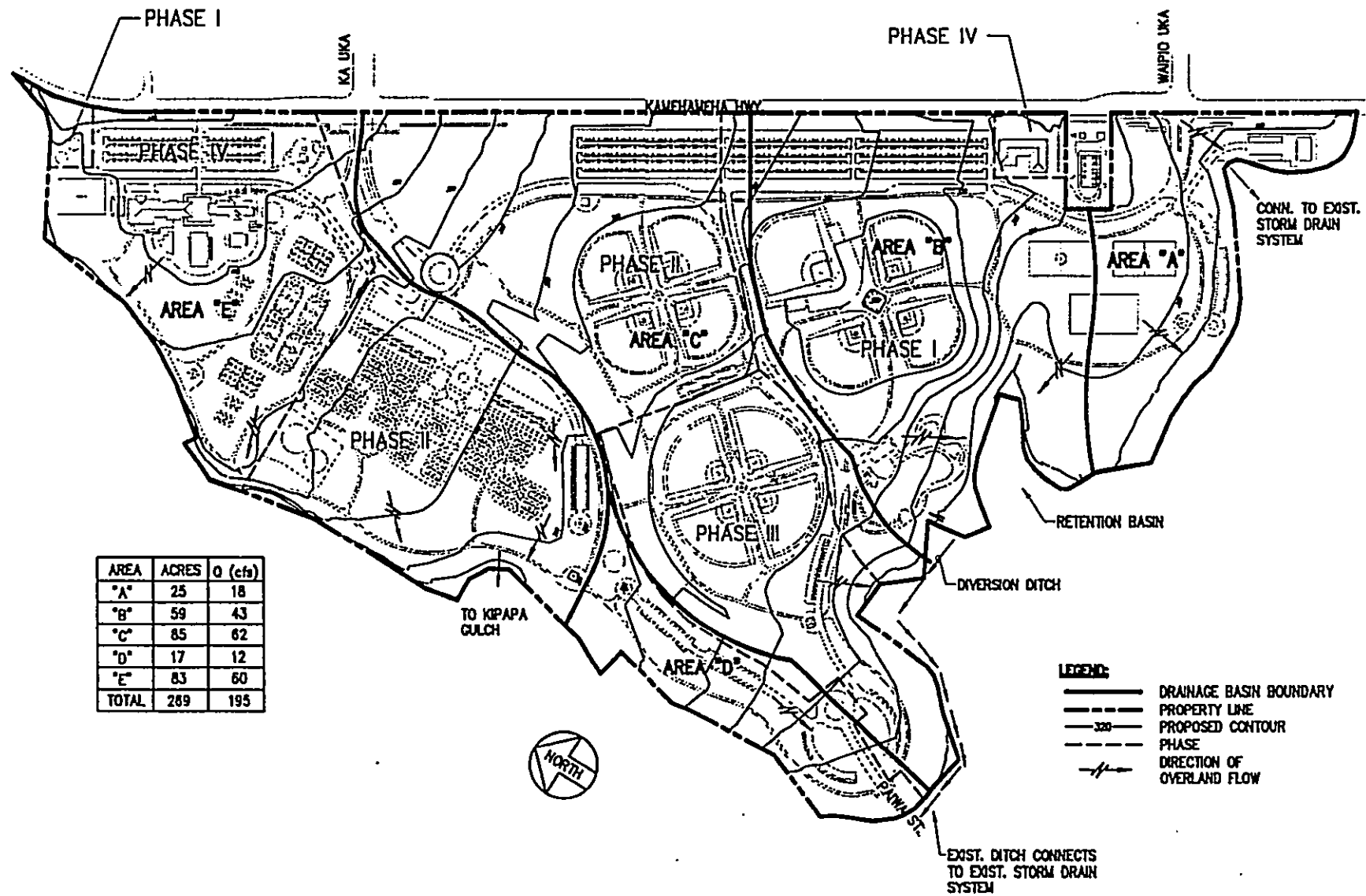


EXHIBIT 9
Sewer Master Plan

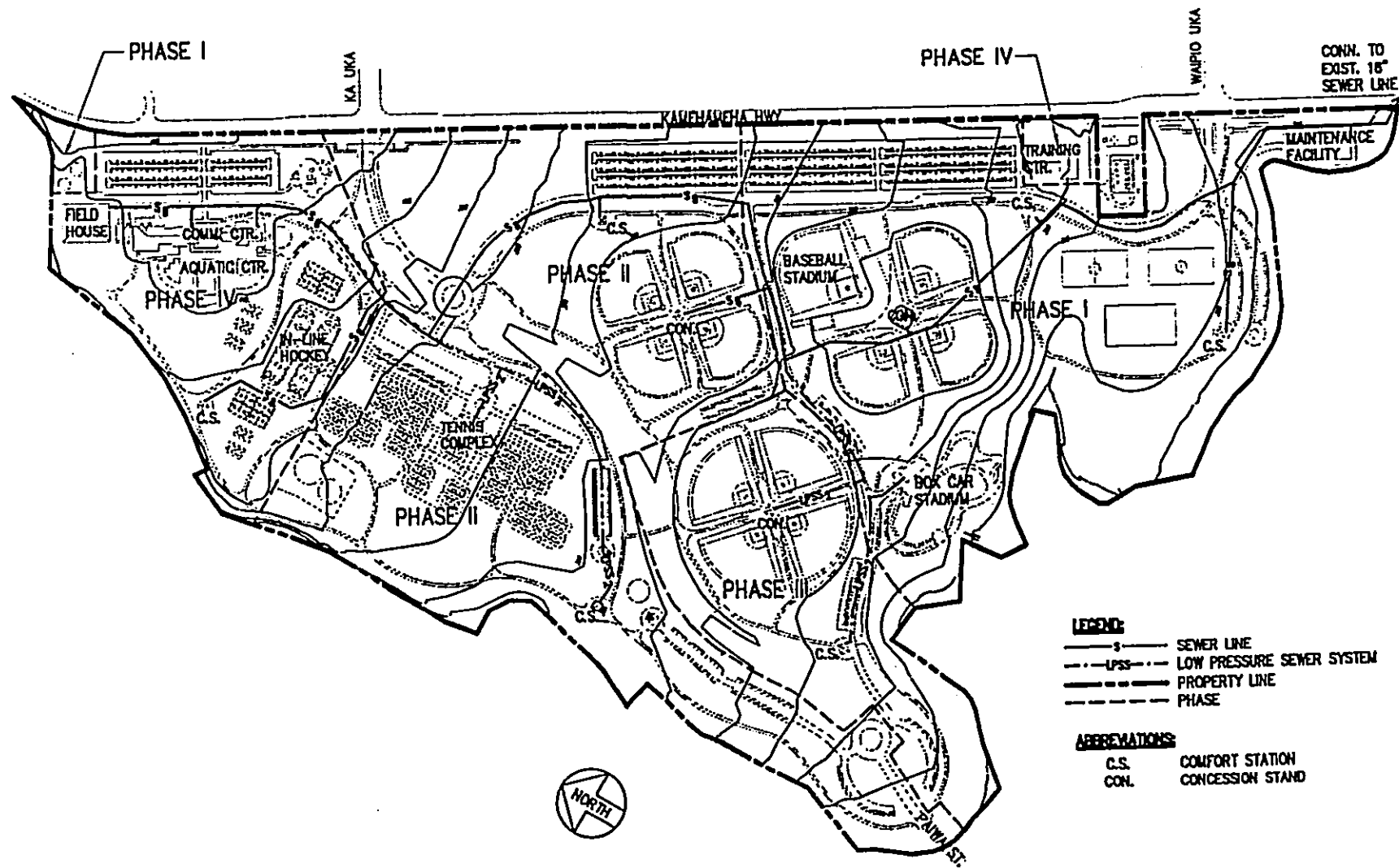


EXHIBIT 10
Projected Drainage Runoff

Drainage Basin	Area (acres)	Flow (CFS)
Sub Area A	25	18
Sub Area B	59	43
Sub Area C	85	62
Sub Area D	17	12
Sub Area E	83	60
TOTAL	269	195

1.9.7. Wastewater Collection System

The wastewater collection system designed for the proposed project will connect to an existing 18-inch gravity line that crosses Kamehameha Highway just south of the site (see Exhibit 9). Because a portion of this gravity sewer, located immediately downstream of the proposed point of connection, is at capacity, either a relief (parallel) sewer will be constructed or the existing line will be replaced with a larger pipe. Although there is an eight-inch gravity line that terminates near the end of Paiwa Road, it does not have any available capacity. Another eight-inch gravity line, which terminates at the freeway interchange (near Eagle Hardware at Waikele Center), has available capacity but this line terminates about 4,000 lineal feet from the project site boundary.

Projected wastewater demand, by development phase, is presented in Exhibit 11. The capacity at the Waipahu Wastewater Pump Station will not be a limiting factor for the proposed project since the City and County Department of Wastewater Management plans to improve the pump station prior to completion of the Phase I of the park.

EXHIBIT 11
Projected Wastewater Demands, by development phase

Phase	Projected Design Flows (GPD)		
	Average	Maximum	Peak
Phase I	2,600	10,600	15,600
Phase II	4,400	18,000	22,100
Phase III	1,600	6,500	9,300
Phase IV	5,200	21,200	22,700
TOTAL	13,800	56,300	69,700

1.9.8. Streams

Kipapa Stream, the principal natural receiving body, has its headwaters in the Koolau Range and joins with Waikele Stream near Waipahu, which discharges into Pearl Harbor's West Loch.

Although Kipapa Stream was not specifically categorized in a 1997 State of Hawaii Department of Health assessment report on the water quality of streams throughout the islands, the waters of Waikele Stream were rated Moderate Category II Impairment, and are described as follows:

Moderate Category II waters, comprising the majority of impaired waters, are characterized by less severe algal and/or turbidity pollution, and suffer from lesser amounts of litter, stream bank erosion, channel modification and stream bank clearing. They may appear dirty, but they are not choked with algae, weeds or debris...People still fish and swim in these waters.³

³ State of Hawaii Department of Health, Environmental Planning Office, "Hawaii's Water Quality-Limited Waters: The 1997 Assessment", March 1997; page 7.

1.9.9. Flora and Fauna

The project area had been under agricultural cultivation since the early 1900's when its original flora was removed. An Environmental Impact Statement prepared in 1989 for a proposed housing project on this site by the City and County of Honolulu reported no rare and endangered species of flora, and noted that it would be highly unlikely for any such colonies to remain or proliferate due to the history of intensive cultivation.⁴ A similar conclusion was reached in the 1995 conceptual plan report by the State for a park on this site.⁵ Consequently, no additional flora survey was conducted for the preparation of the park plan and current environmental documents. It is highly unlikely that rare and endangered species of flora would remain or proliferate after agricultural use of the site. Therefore, no flora survey of the project site has been undertaken.

Except for a few Royal Poinciana and Monkeypod trees along Kamehameha Highway and the Mango and Banyan trees next to the reservoir, the area is primarily characterized by scrub brush, about two to four feet high, and various common grasses. The predominant plants noted were Sour Bush, Dogtail, Hairy Horseweed, Red Pua-lele, Souththistle, Popolo, Guinea Grass, Swollenfinger Grass, Waltheria and Silky Oak.

Due to the removal of native flora, insects, avifauna and mammals populating the site are largely exotic and not considered rare or endangered species. Various common bird species, such as the barred dove (*Gopelia striata*), lace-necked dove (*Streptopelia chirensis chirensis*), common mynah (*Actidotheres t. tristis*), Japanese white-eye (*Zosterops japonica japonica*) and red-crested cardinals (*Paroaria coronata*) may frequent the site.

⁴City and County of Honolulu Department of Housing and Community Development, *Final Environmental Impact Statement for Waiola Estates / Kipapa Ridge Estates Subdivision*, May 1989.

⁵State of Hawaii Department of Land and Natural Resources, *Conceptual Master Plan for Waiola Park*, September, 1995.

Finally, pests, such as the house mouse (*Mus musculus*), Polynesian rat (*Rattus exulans hawaiiensis*) and Indian mongoose (*Herpestes auropunctatus auropunctatus*) are likely to be at the project site.

1.9.10. Historic, Archaeological and Cultural Resources

The subject site is used for pineapple production and contains no historic structures. Existing improvements are related to agricultural operations and include dirt roads, an irrigation ditch that bisects the property and modern water storage tanks along the perimeter. An overhead 46Kv utility line runs diagonally through the site.

A literature search produced the following historical references to the general project area:

Waipio. Between West Loch of Pearl Harbor and Loko Eo to the lowlands were filled with terraces which extended for over a mile up into the flats along Waikele Stream....It is said that the terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikele.

Waikele. In the flatland, where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted to bananas, beans, cane and small gardens. For at least two miles upstream there were small terrace areas.⁶

⁶ Handy, *The Hawaiian Planter*, 1940.

While the present status of these terraces is not known, extensive construction activities in the valleys since the time of Handy's visit have probably resulted in their destruction. No archaeological sites were mentioned in two other standard references – McAllister's Archaeology of Oahu (1933) and Sterling and Summers' Sites of Oahu (1978).

On August 15, 1985, Chiniago, Inc. conducted a field inspection of the project area. It concluded that pineapple production would have destroyed structural remains (platforms, terraces, shelters, etc.) long ago and the only evidence of past human utilization would be unearthed fragments of food remains and artifacts.

In a report dated September 1986, Mary F. Riford identified a 10m x 6m platform of large boulders built against the northeast slope of Kipapa Gulch. It is located between two roads and may date to historic times when the area was being cleared and used by sugar growers. Riford also noted three shelters along the eastern cliff face of the gulch. None of the shelters contained cultural material. The report also identified sections of a low 3.5-meter-wide railroad berm constructed of crushed coral and limestone and bounded with barbed wire fence along both sides of Kipapa Stream bottom land.

There is also rusting remains of a railroad cane-hauling car to the west side of the berm, along the west side of the stream. Areas of loose piles of boulders with dynamite bore holes were also noted on both sides of Kipapa Stream, a few meters of the current roadbeds.

While no historic or archaeological remains were found during preliminary investigations and are not expected in previously cultivated areas, state law requires that should any remains be uncovered during construction, further disturbance should stop and the State Historic Preservation Division (SHPD) notified immediately.

The applicant consulted with two individuals referred by staff of the State Historic Preservation Division and the Office of Hawaiian Affairs concerning the cultural history of the area and was unable to determine any remarkable event or historical use associated with this site.

1.9.11. View Assessment

The property is most visible to the public from continuous vantage points along Kamehameha Highway, where a strong profile of the Waianae Range forms a backdrop to the panoramic view across the site looking toward the west (Exhibit 12a). The view of the site from the approach at the dead-end of Paiwa Street in Waikele is not as vivid because of the relative lack of distinguishing physical features, such as the mountain profile (Exhibit 12b).

1.10. SOCIO-ECONOMIC CONDITIONS AND DEVELOPMENT HISTORY

The Central Oahu region, where the site is located, has absorbed a large portion of the island's population growth in recent decades. In 1980, Central Oahu had over 101,000 people. By 1990, its population had increased by about 28 percent to 130,000, accounting for 40 percent of the islandwide population growth during the 1980-1990 decade. While data since 1990 indicate that the population growth in the Ewa region is now outpacing that of Central Oahu, the two contiguous regions essentially form a combined urban growth center for the island.

Both Central Oahu and Ewa are predominately suburban residential communities. Household sizes tend to be larger than the average for the island, with more households with children. This demographic profile has brought increased demand for active recreational facilities in the region.

Over the past 12 years, there have been a number of proposals to convert the use of the site from agriculture to various types of urban uses. In 1986, the City and County Department of Housing and Community

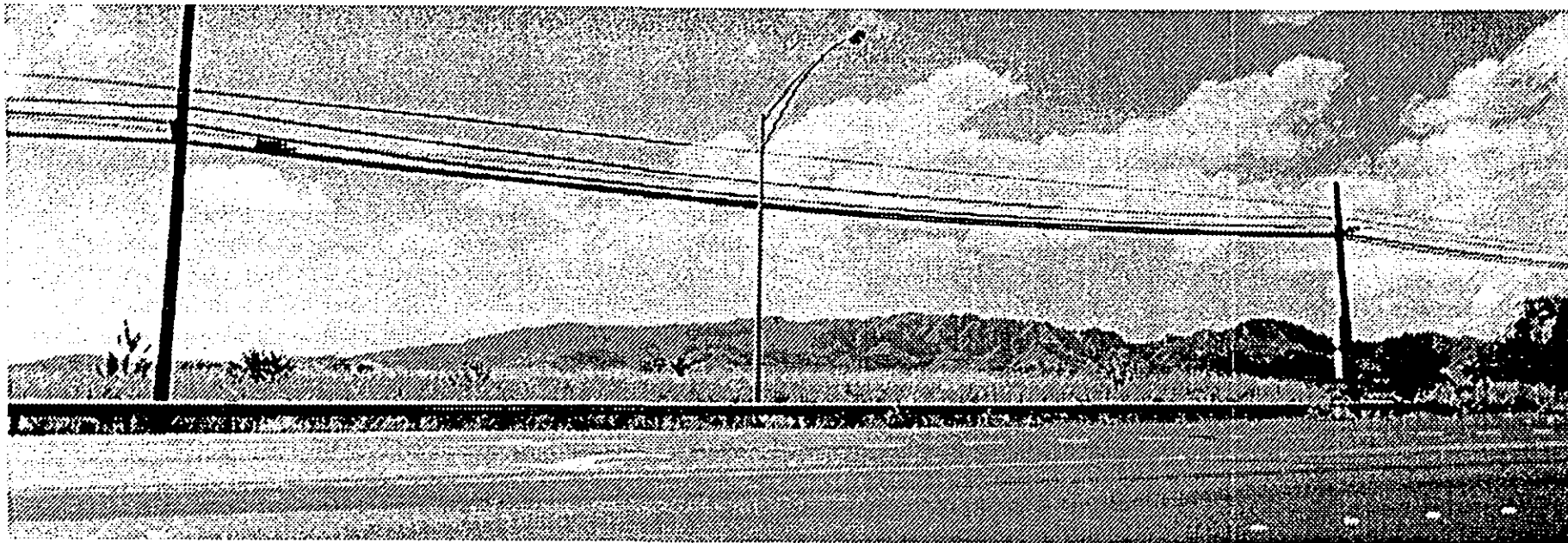


EXHIBIT 12a. Existing view from Kamehameha Highway.



EXHIBIT 12b. Existing view from Paiwa Street.

Development proposed the development of the site as a subdivision consisting of single-family residential lots, an elementary school and a community park. This proposal was revised in 1989 to consist of 1,345 single-family, townhouse and apartment dwellings and an 18-hole municipal golf course. Although the Land Use Commission approved this initiative with conditions, the City and County failed to meet the required preconditions. As a result, the site remained in the Agricultural District.

Recognizing the growing demand for parks and recreation in the region, the Hawaii State Legislature in 1991, appropriated planning funds to evaluate the feasibility of developing the site as a recreational facility. The State Department of Land and Natural Resources published its findings and recommendations in 1995⁷ but did not proceed further because the Legislature had not appropriated funds for implementation. Instead, the City and County of Honolulu has followed through on the park proposal. The 1995 public review draft of the revised Central Oahu Development Plan proposed the development of this site for "several dozen playfields and playcourts of all types, a gymnasium and swimming pools, a community center and community gardens."⁸ The edge of the park along Kipapa Gulch was envisioned as a passive recreational area oriented to a more natural, scenic setting. The Department of Design and Construction has been charged with responsibility for implementing park development based on this general concept.

1.11. TRANSPORTATION FACILITIES AND SERVICES

The existing roads within the project site are primarily for agricultural purposes. At the present time, access to the site is provided only by Kamehameha Highway, which fronts its eastern boundary. Access from

⁷ State of Hawaii Department of Land and Natural Resources, *Conceptual Master Plan for Waiola Park*, September, 1995.

⁸ City and County of Honolulu Planning Department, *Central Oahu Development Plan Report*, June 1995.

the south is possible from the dead-end of Paiwa Street in Waikele.

In December 1997, work was completed on the widening of Kamehameha Highway to four lanes along most of the project site frontage, up to the intersection with Ka Uka Boulevard. North of Ka Uka Boulevard, to Mililani Town, Kamehameha Highway has three lanes. There are traffic signals at the intersections with Waipio Uka Boulevard and Ka Uka Boulevard. Deceleration and acceleration lanes are provided at Waipio Uka Street and Ka Uka Boulevard. Peak traffic periods in the vicinity occur from 6:00 - 8:00 in the morning and 4:00 - 6:00 in the afternoon on weekdays, and 11:30 - 12:30 in the afternoon on weekends.

The 1995 update of the Oahu Regional Transportation Plan proposes a new four-lane road to connect Kamehameha Highway to Kunia Road, mauka of and parallel to the H-1 Freeway.⁹ While it does not specify an alignment, it describes one possible route as starting from the intersection of Ka Uka Boulevard and Kamehameha Highway and continuing westward, with at least one span across Kipapa Gulch to Kunia Road (see Exhibit 13). The cost of bridging Kipapa Gulch makes this an expensive project, with a preliminary estimate of over \$40 million. An easement for a portion of this route, connecting Ka Uka Boulevard to Paiwa Street in Waikele, is provided in the park's conceptual master plan (see Exhibit 3) and is discussed further in a following section on traffic impacts.

The project area is currently served by bus route #52 every half-hour in each direction along Kamehameha Highway to Wahiawa and Honolulu. Ridership is heavy on this route. By 2006, the number of buses assigned to the Central Oahu/North Shore Service Area are planned to be increased from 45 to 60, of which eight are expected to be articulated (high-capacity) buses.¹⁰ Additions to the bus fleet will be used to

⁹ Oahu Metropolitan Planning Organization, *Oahu Regional Transportation Plan Update*, 1995.

¹⁰ Honolulu Public Transit Authority, *Comprehensive Bus Facility and Equipment Requirements Study*, 1994.

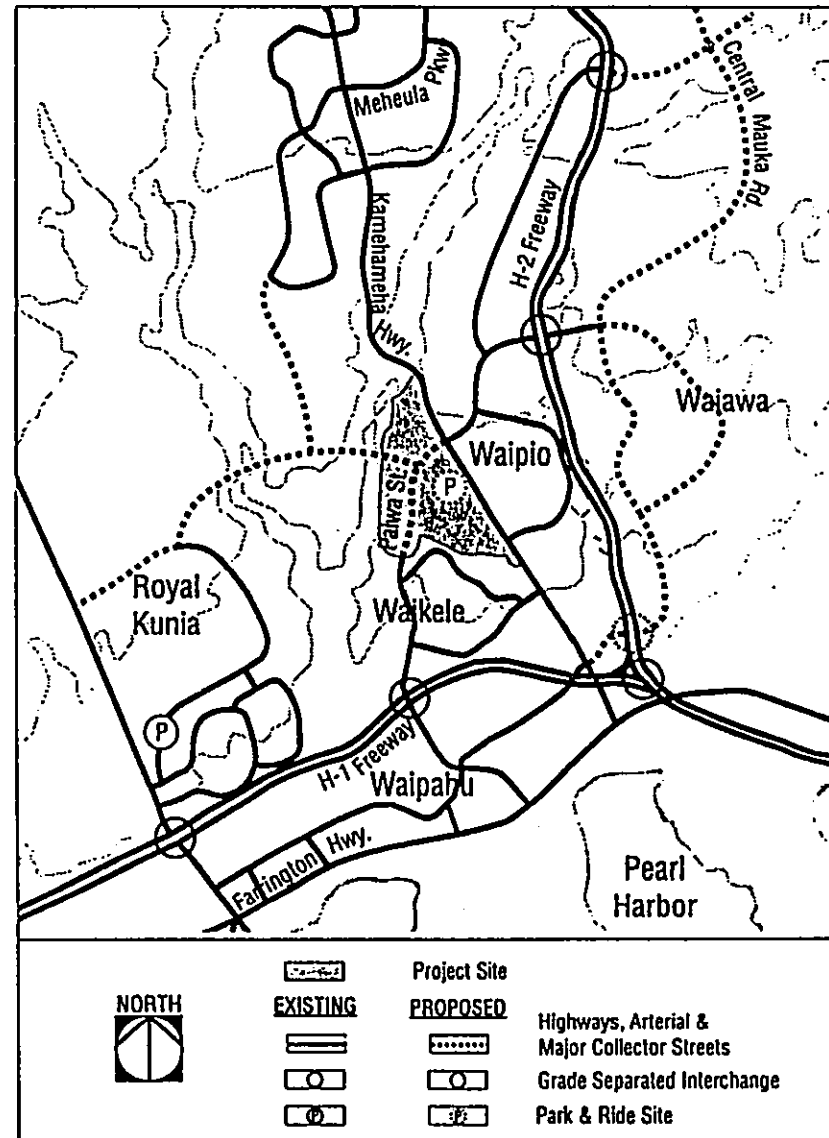
increase capacity and frequency of service, as well as to add new routes. To facilitate commuter use of bus transit in this region, park-and-ride lots have been developed at Mililani Mauka to the northeast, and at Royal Kunia to the west.

1.12. PUBLIC SAFETY AND HEALTH FACILITIES AND SERVICES

Presently, police protection for the area is based at the Wahiawa Station. A new police substation is planned in Waikele, within two miles of the project site. A new fire station at Waikele is presently under construction. Other nearby fire stations include Mililani and Waipahu.

Ambulance service for this area will be based at Waikele Fire Station. Emergency rooms are available at Wahiawa General Hospital and St. Francis West Hospital, both about five miles from the project site to the north and south, respectively.

EXHIBIT 13
Existing and Planned Regional Highway Network



2. Environmental and Socio-Economic Impacts - Evaluation and Analysis

Summarized below are potential environmental and socio-economic impacts, both beneficial and adverse, that the project is expected to have.

2.1. LOSS OF AGRICULTURAL LAND

The loss of the subject parcel from agricultural use will be permanent and irreplaceable upon development of the proposed project. While this site is a small fraction of the 131,430 acres on Oahu that are within the State Agricultural District, the relative productivity of the land needs to be taken into account.

Potential agricultural productivity is assessed by various indices. The subject lands are designated "Prime Agricultural Lands" by the State Department of Agriculture's agricultural lands of importance to the State of Hawaii (or ALISH) system. The "Prime" designation used by the ALISH rating system implies that the property has all the physical and climatic conditions that permit sustained high yields under economically advantageous conditions. According to the State's Land Evaluation and Site Assessment (LESA) system, the site has land evaluation (LE) ratings of 88 and 81 on a scale of 12 to 96. The LESA ratings for these lands indicate that, when irrigated, the land has very good productive potential. About 39,000 acres of Oahu's agricultural lands have LESA ratings higher than the site's ratings.

As of 1995, only about 36,100 acres on the island were in crop production, with nearly two-thirds in sugar cane cultivation. Currently, there are an estimated 18,200 acres in crop production¹¹. The dramatic decline reflects the recent cessation of sugar cane cultivation. Although some of the sugar cane lands can and have already been converted to pineapple production, the supply of such lands greatly exceeds the

¹¹ Per telecon with staff of the Hawaii Agricultural Statistics Service, January 6, 1998.

demand.

For this reason, as early as 1988, the landowner, Castle & Cooke, Inc., stated that "the conversion of these lands (i.e., the subject site) to urban use will not affect pineapple production or jobs over the long term since other surplus lands have been converted to pineapple as part of the overall land utilization program of Castle & Cooke, Inc. and its subsidiaries."¹² Since then, the landowner has in fact discontinued pineapple production on the project site.

The growth of suburban residential communities bordering or adjacent to the site (Waipio, and particularly Waikele) have added pressure to convert the site from agricultural use to urban uses in two respects. First, agricultural operations often generate complaints from nearby residents about the effects of noise, fugitive dust, overspray and other conditions, despite protective laws (Chapter 165, HRS) that limit the circumstances under which existing farming operations may be deemed a nuisance to adjoining urban residential neighbors. Second, urban growth has induced demand for additional community services and facilities, including recreational facilities, which the proposed project addresses. Kipapa Gulch, which is the only non-urban boundary of the site, can serve as an effective buffer between urbanized areas and the remaining agricultural lands on the other side of this natural physical feature.

Acquisition of this site through eminent domain for park purposes is not expected to induce higher land values for other agricultural lands in the area. The purchase price will be based on the land's value for this specific public purpose, in contrast to the potential inflationary effects of a private transaction in speculation on future, undetermined urban uses of the property.

¹²Letter from Castle & Cooke, Inc. to the Department of Housing and Community Development dated June 30, 1988.

2.2. TRAFFIC

Pacific Planning & Engineering, Inc. conducted a traffic impact study for the proposed project (see Appendix C). Traffic counts in the vicinity were taken in December 1997, prior to the holiday recess for schools, to provide baseline data. In addition, other data, including, historic traffic data, future developments proposed in the area, and population and employment projections were used to estimate future traffic conditions with the proposed park. Exhibit 14 presents a summary of projected trips generated by the proposed park.

EXHIBIT 14
Projected Trip Generation

Land Use	Morning		Afternoon		Saturday	
	Enter	Exit	Enter	Exit	Enter	Exit
Baseball Complex	43	7	498	298	464	65
Tennis Complex	28	14	33	64	37	38
Community Ctr/Aquatic	38	20	26	50	27	28
Baseball Fields	0	0	173	85	173	85
Youth Baseball Fields	0	0	57	115	57	115
Softball Fields	0	0	115	57	115	57
Soccer Fields	0	0	18	37	18	37
In-Line Hockey	0	0	40	82	40	82
Boxcar Stadium/Track	0	0	33	17	124	64
TOTAL	109	41	993	805	1055	571

The following intersections were used to determine the relative impact of the proposed project on the existing roadway system:

- Ka Uka Boulevard with Kamehameha Highway;
- Ka Uka Boulevard with Ukee Street;
- Waipio Uka Street with Kamehameha Highway;

- Lumiaina Street with Kamehameha Highway;
- Lumiauau Street with Kamehameha Highway;
- Waipahu Street with Kamehameha Highway;
- Lumiaina Street with Paiwa Street;
- Paiwa Street with H-1 Eastbound offramp; and
- Paiwa Street with H-1 Westbound offramp.

2.2.1. Proposed Roadway Improvements

Based on the traffic study conducted for the proposed project, once completed, the new regional park will have an impact on traffic flow at the study intersections during projected peak hours. Implementing the following recommendations will minimize these impacts.

Kamehameha Highway with Ka Uka Boulevard

The addition of an eastbound leg at this intersection would result in reduced levels of service (LOS). However, with the recommended configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- An exclusive left-turn lane, a through lane and an exclusive right-turn lane on the westbound leg of Ka Uka Boulevard.
- An exclusive left-turn lane, a through lane and a shared through and right-turn lane on the eastbound leg of Ka Uka Boulevard.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Ka Uka Boulevard with Ukee Street

There would be additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Kamehameha Highway with Waipio Uka Street

The addition of an eastbound leg at this intersection would result in reduced LOS. However, with the recommended configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- One shared through/right-turn lane with double left-turn lanes on the westbound leg of Waipio Uka Boulevard.
- One through lane with separate left- and right-turn lanes on the eastbound leg.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Kamehameha Highway with Lumiaina Street

Currently, motorists turning left from Lumiaina Street to northbound Kamehameha Highway experience long delays, LOS F conditions, during all three study periods (weekday peak morning, weekday peak afternoon, and weekend mid-day). This is caused by the heavy left-turn traffic volume. This LOS F condition will continue in the future with or without the project. A possible method to improve this condition would be to modify the signal timing to give more time to Lumiaina Street. Another method would be to separate the eastbound and westbound phases along Lumiaina Street which would eliminate existing left-turn conflicts.

Kamehameha Highway with Lumiauau Street

There would be additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Kamehameha Highway with Waipahu Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Lumiaina Street with Paiwa Street

Motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Paiwa Street with Westbound Off-Ramp (Paiwa Interchange)

Currently, motorists turning right from the off-ramp to Paiwa Street experience LOS F condition during the afternoon and mid-day study periods. The observed maximum vehicle queue was 21 vehicles which was contained in the provided storage lane. Motorists would experience additional delays caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Paiwa Street with Eastbound Off-Ramp (Paiwa Interchange)

During the weekday morning and afternoon peak hours, motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

During the weekend mid-day peak hour, there are 449 left-turns being made from the eastbound off-ramp. Observed queues of 16 vehicles occurred several times during the peak hour. The Highway Capacity

Manual states that double left-turns be considered when left-turn traffic volume exceeds 300 vehicles per hour.

With the project, the forecasted left-turn volume on the eastbound off-ramp is expected to increase to 645 vehicles. Although the level of service indicates LOS D, double left-turn lanes should be considered to reduce the possibility of vehicles queuing onto the freeway. Double left-turn lanes at this intersection can be accommodated within the existing right-of-way.

Special Events

Since the recommendations are based upon probable day-to-day events, large events such as a major baseball game in the stadium, special traffic controls should be implemented if necessary. The traffic control could be similar to what is done for the Special Events Arena at the University of Hawaii and the Aloha Stadium. Examples of such controls include the use of traffic control personnel and coning.

Phase I Improvements

The recommended improvements described above are for full build-out conditions. The Central Oahu Regional Park will be constructed in several phases. Phase I will consist of general recreational uses (i.e. baseball, soccer and multi-purpose fields). Access will be via Kamehameha Highway only, therefore, roadway improvements for Phase I would be those described earlier for Kamehameha Highway and Waipio Uka Street.

2.2.2. Other Traffic Mitigation Measures

In addition to the roadway improvements described above, the internal circulation plan is designed to help disperse traffic during peak periods of park usage on weekends and during special events (see Exhibit 15). The conceptual plan shows a network that allows access to the main parking area fronting Kamehameha Highway from all three entries (at Ka Uka Boulevard, Waipio Uka Boulevard and Paiwa Street) for special

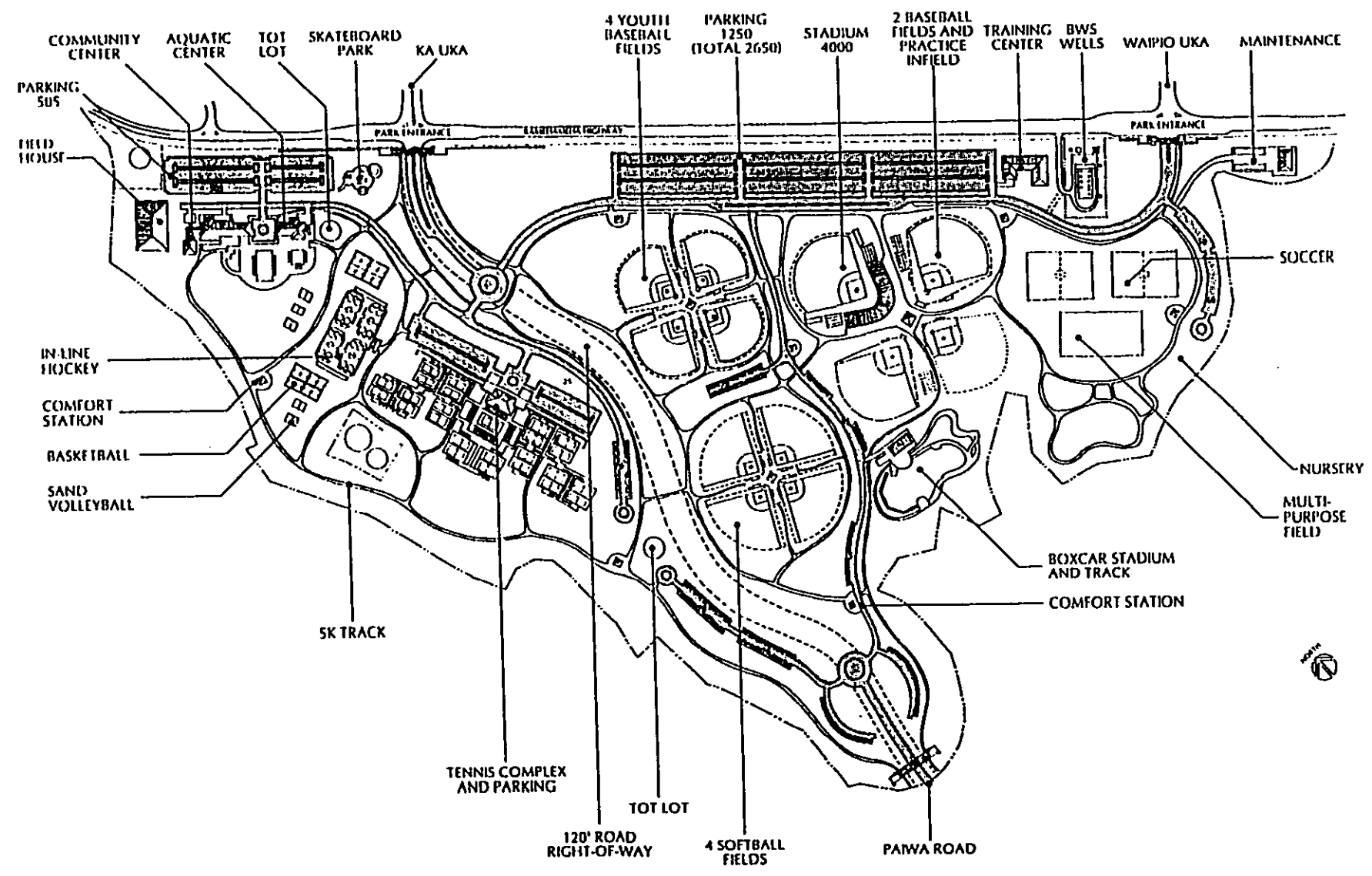
events and peak periods of weekend usage. At other times, a gate along the internal park circulation road near the main parking area will be closed to prevent use of park roads as a *de facto* through-route for traffic between Paiwa Street and Kamehameha Highway.

Most of the vehicular parking and all of the bus loading spaces are located adjacent and parallel to Kamehameha Highway, near the sites for the park's major sports facilities and activity areas (see Exhibit 3). This layout provides more direct access to the arterial highway and major bus route, minimizing vehicular conflicts with pedestrian and bicycle movement within the park. It also serves as a convenient drop-off area for park users, because principal destination areas will be within convenient walking distance of the main parking lots and bus loading zones.

In the future, the main parking and bus loading area may also make it suitable for potential joint use as a park-and-ride lot for commuters during off-peak periods for the park and athletic facilities. Because a park-and-ride lot is not being proposed as part this project, should the Department of Transportation Services (DTS) decide to pursue its development as part of the regional transportation system, a separate environmental assessment will be required. Such a project would also need to comply with other federal requirements and compete with other projects prior to receiving any federal funding.

Another transportation measure anticipated in the conceptual master plan is the reservation of a 120-ft-wide easement for a future through-road connecting Ka Uka Boulevard to Paiwa Street. This will enable access to the park from both the south and the north at all times, as well as provide an important link in the regional highway network. Although the through-road is not to be built as part of the park project, the City and County will be constructing the road at a later date, as a separate project under a separate environmental assessment. When completed, the future road will be designed as a "parkway"; i.e., with a curvilinear configuration to discourage speeding vehicles, a landscaped median, landscaped berms, and separated bikeways and walkways on either side of the road. The latter feature is intended to encourage bicycle and

EXHIBIT 15
Internal Circulation Plan



pedestrian travel to and through the park, as well as to serve as a recreational facility in itself.

2.3. SOILS

Because of the possible presence of herbicides and pesticides, and the hazardous material discovered during preliminary geotechnical investigations, a more detailed analysis of hazardous substances on the site was conducted. The report, which includes recommendations for appropriate handling and removal of these materials, is contained in Appendix F. The City and County will comply with the recommended mitigation measures.

2.4. DRAINAGE

The proposed drainage system will emphasize surface flow, avoiding inlets and pipes to the greatest extent practicable. Stormwater runoff from impervious surfaces will be directed to grassed swales and existing drainage patterns will be preserved where practicable. Stormwater flow will be dispersed instead of concentrated at discharge points. To reduce polluted runoff from the project site during construction and long-term operation, activities will incorporate the following best management practices:

Construction

- Silt fences and controlled ingress/egress to prevent construction debris from migrating off-site;
- Temporary erosion control measures during construction and permanent landscaping once finish grades are established; and
- Scheduling mass grading scheduled to avoid rainy season, and opening no more than 15 contiguous acres at a time for grading.

Operations

- Direct parking lot runoff to grassed swales or inlets with filters

to prevent petroleum contamination (from vehicles) from entering storm drainage system;

- Landscape maintenance personnel to monitor use of fertilizers, pesticides and herbicides; and
- Direct wash water from vehicles and maintenance equipment to the wastewater system.

2.5. NOISE AND LIGHT

Vehicular traffic is the principal source of ambient noise levels within 500 feet of Kamehameha Highway. Beyond that distance, aircraft or birds and other natural sources are the principal contributors to background noise, which is estimated at 40 to 45 Ldn. Agricultural equipment, including trucks, are the principal sources of noise within the site itself. With the development of the regional park, recreational activity, particularly during major athletic events, will be the principal generators of noise.

To minimize the impacts of both noise and glare from night lighting in residential areas, facilities likely to generate the highest levels of noise and glare from evening spectator sporting events are located within the interior of the site or adjacent to the Waipio light industrial area and highway. Distance and the buffering effects of intervening landscaping and structures will dissipate the noise and screen the visibility of the light before it reaches residential areas. The site of the baseball stadium, for example, is located more than a quarter mile from the nearest residence in Waikele; on the Waipio side, any noise generated by spectators will be masked by intervening traffic noise from Kamehameha Highway. The closest spectator facility to residential areas is the boxcar stadium, whose seating area is about 400 feet from the nearest residence in Waikele. This facility, however, will not be lighted or used in the evenings and its seating capacity is limited to a maximum of 500 spectators. In designing and operating the facilities, the City and County will implement the recommendations in the acoustical study, which is contained in Appendix D.

2.6. AIR QUALITY

Vehicular traffic generated by the park will also affect ambient air quality. With the demise of the sugar industry, vehicular traffic is the principal source of air-borne pollutants in this region. Since the peak traffic periods associated with the park will not coincide with the peak commuting periods in the region, project-generated vehicular traffic is not expected to intensify the periods when ambient carbon monoxide levels are at their highest.

During construction of the project, there will be short-term impacts on both noise levels and air quality. Construction equipment and activities will generate noise and air-borne emissions. In addition, the earthwork will produce dust. The proposed project will employ an effective dust control plan, including frequent watering of bare-dirt surfaces, use of wind screens, and covering of open-bodied trucks, to minimize fugitive dust emissions. Grading, excavation and construction activities will conform with all relevant state and local controls to minimize air quality and noise impacts.

For a more specific analysis of probable impacts on air quality, refer to Appendix E. The City and County will follow the recommendations in this report and the acoustical study to mitigate the short-term noise and air quality impacts during the construction periods for the park.

2.7. NONPOTABLE WATER CONSUMPTION

In the short-term, the Waipio Heights Wells II is available as a temporary source of irrigation water. Although the pesticide levels are too high for potable water use, the current water quality is adequate for irrigation purposes. This water will be available until the treatment work for the pesticide levels is completed; BWS estimates three years for its completion.

Although short-term nonpotable water is available, a long-term source of water for park irrigation is needed. Based on an evaluation of possible nonpotable water resources, the following approach will be undertaken:

- Apply to the Commission for allocation from the Waiahole groundwater "buffer."
- As back-up, also apply for a temporary groundwater allocation. Although a permanent allocation is unlikely, a temporary allocation may be possible since OSCO's existing groundwater allocation is not being used, and some time would be required before all groundwater allocations being applied for by BWS could be developed and brought on line.
- Design and construct the park's irrigation system to bring reclaimed water onto the site in the future, when more information and a source become available.

2.8. SCENIC VIEWS

The existing view from Kamehameha Highway across the site toward the Waianae Mountains will be altered by the proposed development. At present, due to the open character of the agricultural fields, there is a mostly unobstructed panoramic view of the mountain range. Although there are few structures or roadside trees to interrupt this vista, the existing overhead communications lines are unsightly.

Exhibit 16 illustrates the site from Kamehameha Highway under existing conditions and with proposed landscape improvements. Once landscaped, a grassy berm and roadside trees will be the most visible element of the park from the highway. The berm will almost completely obscure the majority of the park. The larger structures will be located within the interior of the park to minimize their visibility from the highway. For example, the baseball stadium is planned near the center of the site, away from the highway. In addition, lighted facilities have been designed to minimize their visibility from residential areas. Both the baseball stadium and the tennis courts, for example, will be separated from residential areas by a heavy screen of landscaping. To further improve visual conditions, the existing overhead electrical and communication lines within the park and the Kamehameha Highway right-of-way will be placed underground as part of the project's

development.

On balance, development of the project will result in a more visually appealing view of the Waianae Mountains from Kamehameha Highway. Moreover, the park itself will create many new viewing opportunities for the public which are presently not available, such as along the edges of Kipapa Gulch, where there are even more dramatic views of the natural landscape than from along Kamehameha Highway.

2.9. EMPLOYMENT GENERATION

The project will generate short-term employment during construction and long-term jobs when the facilities are in operation. The regional park will create approximately 38 new public sector jobs for the maintenance of facilities and the administration and operation of public recreation programs. In addition, some of the sports facilities are expected to generate both direct private sector employment and secondary employment by attracting professional training programs and sporting events.

2.10. COMMUNITY SERVICES

The project will require police and fire protection and emergency health services, as would any park and recreational complex designed for active use. The Honolulu Police Department anticipates the need for an additional cushman beat or five additional officers to respond to the increase in calls for service attributable to park development. In addition, security and medical assistance will be provided privately for professional sporting events and training programs.

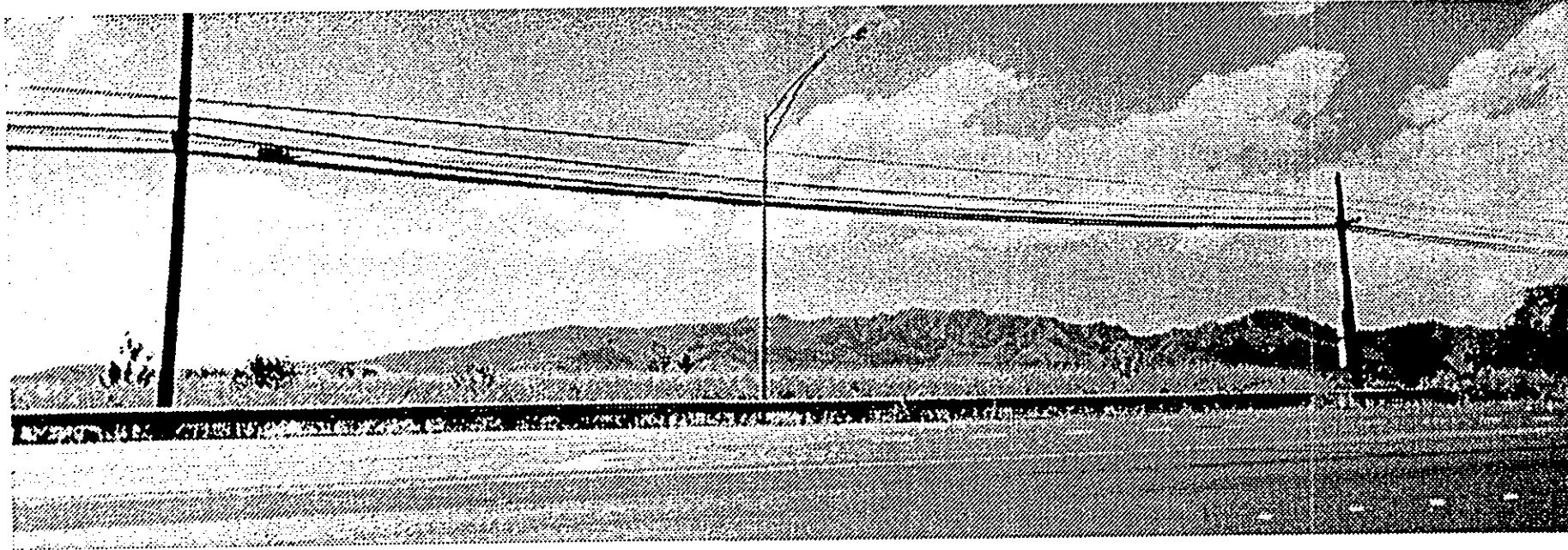


EXHIBIT 16a. View from Kamehameha Highway under existing conditions.

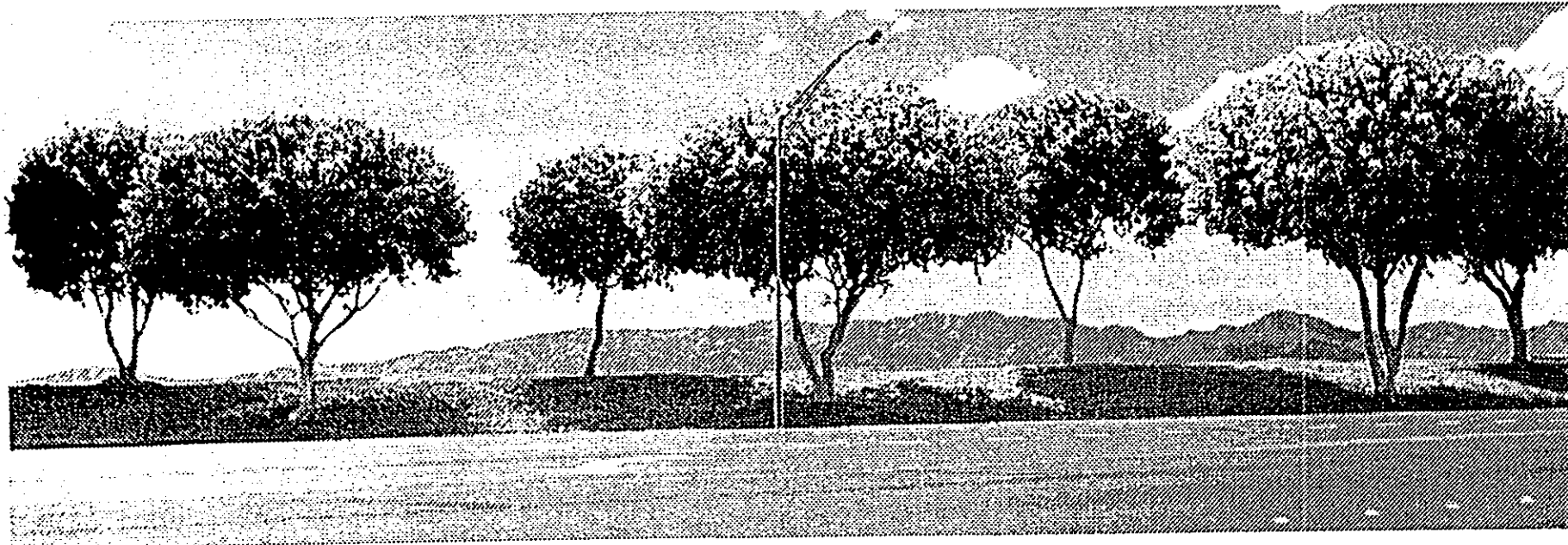


EXHIBIT 16b. View from Kamehameha Highway with proposed landscaping improvements.

3. Relationship Between Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Productivity

The proposed use will support and complement uses in the surrounding residential communities and provide lasting, positive benefits to residents and visitors seeking a wide range of recreational opportunities. As such, the proposed recreational complex will enhance the long-term productivity of the project site. The long-term benefits realized from the project are considered to clearly outweigh short-term, temporary physical impacts on the environment.

No reasonable land use options are foreclosed since other alternative uses, such as expanding institutional uses or developing market housing, would result in potentially more adverse effects, and would not support important social objectives of the community.

4. Irretrievable and Irreversible Commitments of Resources and Unresolved Issues

4.1 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENTS OF RESOURCES

The proposed project will result in an irreversible and irretrievable commitment of capital, labor, land and energy for the design and development of the project. Construction materials and human resources (labor) will be committed and land, when fully developed, will be irretrievably committed to the proposed permanent uses of the land.

The proposed project will not adversely curtail potential use of the land since, among the alternative uses considered for the project site, such as expanding institutional uses or developing market housing, the proposed recreational complex is considered the most appropriate in terms of community needs, public policies and long-term effects on the surrounding environment.

No natural resources on the project site will be committed and the socio-cultural resources in surrounding environs will be enhanced by the development of the project.

4.2 UNRESOLVED ISSUES

The long-term source of irrigation water for the park will not be resolved until the State Commission on Water Resource Management has approved an allocation from one of the potential sources identified and discussed in this document.

5. Relationship of the Proposal to Land Use Plans, Policies and Controls

5.1. FEDERAL

No federal funds will be used for construction or operation of the project, and no federal plans, policies or controls are affected.

5.2. STATE

5.2.1. State Land Use

The project site is located within the State Agricultural District (see Exhibit 17). ~~The City will petition the State Land Use Commission for a boundary amendment to include the site in the State Urban District. The proposed project is a permitted use within this land use district.~~

5.2.2. Hawaii State Plan

The Hawaii State Plan (Chapter 226, HRS) serves as a guide for the future long-range development of the State. The plan identifies goals, objectives, policies and priorities, and provides a basis for allocating limited resources, such as, public funds, services, human resources, land and energy. Policies relevant to the proposed project are discussed below.

Sec. 226-23 Objectives and policies for socio-cultural advancement – leisure

- (2) *Provide a wide range of activities and facilities to fulfill the cultural, artistic and recreational needs of all diverse and special groups effectively and efficiently.*
- (5) *Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.*
- (6) *Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.*

- (7) *Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawaii's people.*

Comment: The proposed project will provide opportunities for a wide range of recreational activities, that will fulfill the recreational needs of both residents and visitors, and further the state's policies relating to leisure activities and the socio-cultural advancement.

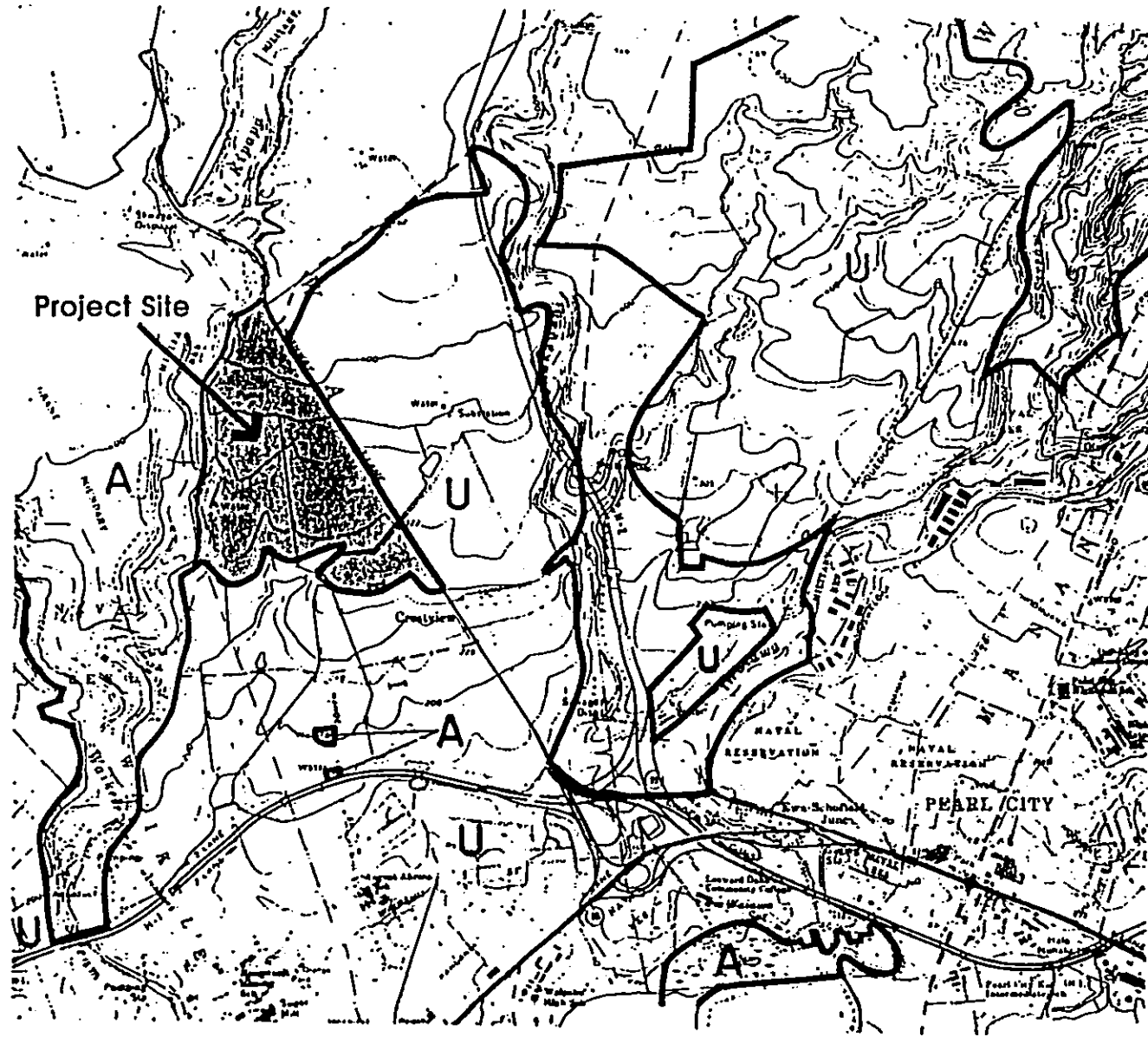
5.2.3. State Recreation Functional Plan

Functional Plans set forth the objectives, policies and programs to guide the state and local governments, and the private sector in implementing the State Plan. Consistent with Objective II-C of the State Recreation Functional Plan, to *improve and expand the provision of recreation facilities in urban areas and local communities*, the proposed project will provide recreational facilities for the neighboring communities, particularly Waikele, as well as the region as a whole. Currently, despite being one of the fastest growing urban areas on the island, Central Oahu is the only major population area without a regional park either presently in existence or in the planning and development stage.

5.2.4. Hawaii Coastal Zone Management Objectives and Policies

The proposed project is consistent with the Hawaii Coastal Zone Management (CZM) objectives and policies (see Appendix G for Hawaii CZM Program assessment form).

EXHIBIT 17
State Land Use Districts



5.3. CITY & COUNTY OF HONOLULU

5.3.1. General Plan

The City's General Plan sets forth long-range social, economic, environmental and design objectives and policies for the general welfare and prosperity of the people of Oahu. The following is a discussion of the project's relationship to the General Plan objectives and policies.

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

Policy 8 Locate community facilities on sites that will be convenient to the people they are intended to serve.

Comment: A facility at this site would be centrally-located, convenient to residents and accessible from the North Shore, Central Oahu, Ewa and the Primary Urban Center from Kamehameha Highway, and the H-1 and H-2 Highways.

Objective D To provide a wide range of recreational facilities and services that are readily available to all residents of Oahu.

Policy 1 Develop and maintain community-based parks to meet the needs of the different communities on Oahu.

Policy 2 Develop and maintain a system of regional parks and specialized recreation facilities.

Policy 3 Develop and maintain urban parks, squares, and beautification areas in high density urban places.

Policy 7 Provide for recreation programs which serve a broad spectrum of the population.

Comment: Within the last two decades, the Central Oahu and Ewa regions have formed an urban growth center for Oahu, absorbing a large proportion of the island's population growth. This trend is projected to continue into the next century. Consistent with the General Plan, the proposed project will provide a wide variety of recreational facilities, intended to serve the existing and projected residential population of both the Central Oahu and Ewa region. In addition, because there is currently no major sports complex on Oahu, the proposed project would also serve the recreation needs of island residents, as a whole.

5.3.2. Development Plan

The City's Development Plans (DPs) implement the objectives and policies of the General Plan, and serve as a guide for more detailed zoning maps and regulations, and public and private sector investment decisions. The island of Oahu is divided into eight DP areas. The proposed project is located within the Central Oahu DP area. The following is a summary of the relationship between the proposed project and potential social impacts identified in Section 24-1.10(b) of the DP common provisions. A complete discussion of the potential impacts of the proposed project is included in Section 2.

- (1) Demographic. The project will have no effect on resident population. It is proposed primarily in response to a resident population growth pattern that has already occurred. Should the proposed project attract national sports tournaments and training programs, the area will likely experience an increase in the visitor population.
- (2) Economic. The project will generate short-term employment during construction, and long-term jobs once the facilities are in operation. Possible long-term employment will be required for the maintenance, administration and operation of public recreation programs. Additionally, the proposed project may

generate additional employment by attracting professional training programs and sporting events.

- (3) ***Housing.*** The project will have no effect on housing supply or demand.
- (4) ***Public Service.*** The project will require police, fire protection and emergency services, as would any park and recreational complex designed for active use. While traffic is expected to increase from the existing level, the peak project-generated traffic periods will not occur during peak periods of regional commuter traffic. With regard to water, estimates for both irrigation and domestic water consumption for the first phase of development are consistent with the Board of Water Supply guidelines for the master planning of parks. Other sources of non-potable water are being investigated to accommodate the park's future development.
- (5) ***Physical; environmental.*** The proposed project will alter views from Kamehameha Highway looking towards the Waianae Range. Instead of the existing panoramic vista, the proposed trees and landscaping along the highway frontage and more distant structures within the park will result in intermittent views of the mountains. The park's development will, however, create significant viewing opportunities within the site that are presently unavailable to the public. On balance, development of the project will result in an increase in vantage points for high quality views of the natural environment.

The proposed site is currently designated "Agriculture" on the DP Land Use Map and "Park" on the DP Public Facilities Map. The proposed development is a permitted use within the existing designations.

5.3.3. City & County Zoning

The project site is currently zoned AG-1, Restricted Agriculture. The proposed project is a permitted use within this zoning district.

6. Consulted Parties and Participants in the Preparation of the Draft EIS

In 1997, the City and County of Honolulu Planning Department consulted county, state and federal agencies and the Mililani/Waipio/Melemanu Neighborhood Board on a proposed amendment to the Central Oahu Development Plan Public Facilities Map for the project. Subsequent to this consultation process, the Planning Department initiated the Public Facilities Map amendment. The City Council approved the amendment and the budget request for preparing the master plan, environmental assessment and design for the first phase.

In the latter part of 1997, the Mayor formed a Public-Private Sports Industry Task Force to assist in the master planning of the Central Oahu Regional Park site, as well as proposed sports complex sites at Waipio Peninsula and the former Barber's Point Naval Air Station. The Task Force is comprised of state and city elected representatives of the Central Oahu and Ewa regions, community-based sports leagues and groups, and city agencies.

Additionally, the following agencies and organizations reviewed the Draft EIS. Their comments and responses to these comments are included in Appendix I.

City and County of Honolulu

Board of Water Supply
City Council, Parks and Human Services Committee
Department of Land Utilization
Department of Parks and Recreation
Department of Public Works
Department of Transportation Services
Department of Wastewater Management
Mililani/Waipio/Melemanu Neighborhood Board No. 25
Waipahu Neighborhood Board No. 22
Mililani Mauka Neighborhood Board
Planning Department

Police Department

State of Hawaii

Dept. of Business, Econ. Development & Tourism
Department of Education
Department of Health
Department of Land & Natural Resources
Department of Transportation
Land Use Commission
Office of Environmental Quality Control
Office of Hawaiian Affairs
Office of Planning
University of Hawaii at Manoa Environmental Center
University of Hawaii at Manoa Water Resources Research Center

United States

Department of Agriculture
Department of the Army
Fish and Wildlife Service
Natural Resources Conservation Service

Other Organizations

American Lung Association
Hawaii Audubon Society
Hawaiian Electric Company
Leeward Oahu Transportation Management Assoc.
Life of the Land
Mililani Recreation Advisory Council
The Outdoor Circle
Sierra Club
SMS Research

7. Comments and Responses on the EIS Preparation Notice and the Draft EIS

The following agencies and organizations received the EIS Preparation Notice:

City and County of Honolulu

Board of Water Supply
City Council, Parks and Human Services Committee
Department of Land Utilization
Department of Parks and Recreation
Department of Public Works
Department of Transportation Services
Department of Wastewater Management
Mililani/Waipio/Melemanu Neighborhood Board No. 25
Waipahu Neighborhood Board No. 22
Mililani Mauka Neighborhood Board
Planning Department
Police Department

State of Hawaii

Dept. of Business, Econ. Development & Tourism
Department of Education
Department of Health
Department of Land & Natural Resources
Department of Transportation
Land Use Commission
Energy Office
Office of Environmental Quality Control
Office of Hawaiian Affairs
Office of Planning
Univ. of Hawaii at Manoa Environmental Center
Univ. of Hawaii at Manoa Water Resources Research Center

United States

Department of Agriculture
Army Corps of Engineers
Fish and Wildlife Service
Natural Resources Conservation Service

Other Organizations

American Lung Association
Hawaii Audubon Society
Hawaiian Electric Company
Leeward Oahu Transportation Management Assoc.
Life of the Land
Mililani Recreation Advisory Council
The Outdoor Circle
Sierra Club

Copies of EIS Preparation Notice comment letters and responses to these comment letters are attached as Appendix H.

Copies of comments to the DEIS and responses to these comments are attached as Appendix I.

APPENDIX A
WATER RESOURCE EVALUATION

**WATER RESOURCE EVALUATION
PROPOSED WAIOLA REGIONAL PARK
AND SPORTS COMPLEX
94-2689 Paiwa Street
TMK 9-4-5: 74
WAIPIO, OAHU, HAWAII**

1.0 INTRODUCTION

1.1 OVERVIEW

This report presents the results of Masa Fujiloka & Associates' (MFA's) Water Resource Evaluation for the subject property. The general location of the site is shown on Figure 1 (Map of Area).

1.2 SCOPE OF WORK

MFA completed the following scope of work for this report:

1. **Data Gathering, Interviews, Review and Evaluation of Available Data**
MFA gathered available information, conducted interviews, and evaluated available data on the following water sources:
 - a. Waiahole Ditch water;
 - b. Groundwater development;
 - c. Existing Board of Water Supply (BWS) water allocation;
 - d. Future BWS water allocation;
 - e. Reclaimed water (tertiary treated effluent); and
 - f. Taking over existing agriculture allocations of Waiahole Ditch Water
2. **Data Analysis and Technical Evaluations**
MFA evaluated the available data and performed technical evaluations of the possible water sources, including total water availability, relative cost of development, and potential for obtaining applicable permits and/or allocations.
3. **Report Preparation**
MFA summarized available data and provided this detailed discussion of the technical and economic considerations and the likelihood of allocation approval of the various potential water sources. In this report, MFA provides a recommendation on which water sources should be pursued.

2.0 SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The subject site is located at 94-2689 Paiwa Street (temporary address) in the Waipio area of Oahu (see Figure 1). According to information supplied by Mr. Vince Ng of Walters, Kimura, Motoda, Inc., the subject site consists of Tax Map Key 9-4-05: Parcel 74 (see Figure 2). Castle & Cooke Homes Hawaii, Inc. is listed as the owner of this parcel (C&C, 1998a).

2.2 SITE AND VICINITY CHARACTERISTICS

The subject site is located in central Oahu on the Schofield Plain, approximately 8,500 feet northwest of the Pacific Ocean. The site is currently fallow agricultural land, previously used to grow pineapple. Rainfall in the site area is typically less than 39 inches per year (DLNR, 1986).

U.S. Naval Magazine Lualualei, Waikele Branch (including Kipapa Gulch) is located west of the site; Hawaii Okinawa Center, McDonald's, Waipio Gentry residential area, Waipio Shopping Center, and Crestview residential area are located east of the site (across Kamehameha Highway); Waikele residential area is located south of the site; and Kamehameha Highway (to Mililani across the F.D. Roosevelt Bridge) is located north of the subject site (see Figure 3).

2.3 PHYSICAL SETTING

2.3.1 Topography

Topographic map coverage of the site vicinity is provided by the U. S. Geological Survey (USGS) Waipahu (USGS, 1983) quadrangle at a scale of 1:24,000. The center of the subject site is located at approximately 21°25'09" north latitude and 157°59'35" west longitude. The north end of the subject site sits at an elevation of less than 440 feet above mean sea level. The south end of the subject site sits at an elevation of less than 300 feet above mean sea level. The USGS topographic map does not show any structures on the subject site.

2.3.2 Current Land Use and Zoning

The subject site is zoned as a restricted agriculture district, (AG-1). The intent of the AG-1 restricted agriculture district is to conserve and protect important agricultural lands for the performance of agricultural functions by

permitting only those uses which perpetuate the retention of these lands in the production of food, feed, forage, fiber crops and horticulture plants (C&C, 1998b).

The site is not located in a flood zone (FIRM, 1987).

2.3.3 Geologic and Hydrogeologic Setting

MFA reviewed published geologic and hydrogeologic reports and maps to obtain information regarding subsurface conditions in the general area of the site.

Geology

The island of Oahu is of volcanic origin and was built by the Waianae and Koolau Volcanoes (MacDonald et al., 1983). The two ranges have lost most of their original shield outlines and are now long narrow ridges shaped largely by erosion. Lava flows from the Koolau volcano banked against the already-eroded slope of the Waianae volcano to form the gently sloping surface of the Schofield Plain (MacDonald et al., 1983). The site is located on the Schofield Plain.

The Schofield Plain is about 14 miles long and 5 miles wide and rises from the vicinity of sea level on the south and north sides to an altitude of about 1,000 feet at Schofield Barracks. Narrow canyons have been cut by Kipapa, Waikakaloa and Waikele Streams on the south side and Kaukonahua, Poamoho, and Opaepala Streams on the north side. Erosion of the interstream areas has been small and has proceeded downward by practically stripping layer by layer. Large dense boulders, erosional remnants of the massive part of lava flows, can be found on the surface of the plain (Stearns and Vaksvik, 1935).

The weathering of the basalt on the plateau has reached depths of 50 to 100 feet, and in most places there is 5 to 10 feet of soil cover. The surface of the plain consists of dark-brown alluvial soils and red lateritic residual soils (Stearns and Vaksvik, 1935).

Soils

According to the U.S. Soil Conservation Service (Foote et al., 1972), there is one soil type at the site, subdivided into three classifications based on slopes (see Figure J). These three soil classifications at the site are Molokai silty clay loam; 3 to 7 percent slopes (MuB), 7 to 15 percent slopes (MuC), and 15 to 25 percent slopes (MuD). The Molokai Series consists of well-drained soils on uplands on the islands of Maui, Lanai, Molokai, and Oahu (Foote et al., 1972). The following

table provides a description of each type of Molokai silty clay loam described to occur at the site.

Table 1. Soil Description for Soils at Site

Soil Type	Slope	Runoff Rate	Erosion Hazard	Use
MuB	3 to 7%	slow to medium	slight to moderate	sugar cane, pineapple, pasture, wildlife habitat, and home sites
MuC	7 to 15%	medium	moderate	sugar cane, pineapple, pasture, wildlife habitat, and home sites
MuD	15 to 25%	medium	severe	sugar cane and pineapple

Hydrogeology

The natural regional hydraulic gradient of groundwater at the site would normally be south-southwest towards Pearl Harbor. Springs around Pearl Harbor serve as the natural exit point for groundwater flow within the basalts of this area, except for groundwater intercepted by wells.

Two municipal wells are located to the east of the site, in the Waipio residential area across Kamehameha Highway. These wells would likely impact local groundwater flow around each well, and would be expected to have little impact on the regional groundwater flow.

Groundwater resources in the area are listed as being in the Pearl Harbor aquifer system of the Waipahu and Waiawa aquifer sector. According to Mink and Lau (1990), two aquifers underlie the site (see Figure 4).

The first aquifer is located beneath the majority of the site and is part of the Waipahu aquifer sector. The second aquifer is located beneath the southeast tip of the site (approximately 0.2 acres) and is part of the Waiawa aquifer sector. Both aquifers are listed as unconfined (where the water table is the upper surface of the saturated aquifer), basal (fresh water in contact with sea water), and occurring in flank lavas. The aquifers are described to be currently in use as fresh (<250 mg/L Cl⁻) drinking water sources, and are listed as having a high vulnerability to contamination and as irreplaceable (Mink and Lau, 1990).

The site is located above the Underground Injection Control (UIC) line (DOH, 1983).

Sustainable Yield

Sustainable yield is the estimated maximum rate of withdrawal from the aquifer without impairing the water quality or quantity. Oahu's groundwater sustainable yield is 465 million gallons per day (MGD) (DLNR, 1997). Currently 416 MGD is produced from developable sources which have little or no impact on stream flows. Current groundwater allocations over Oahu total 340 MGD. This leaves only 76 MGD (416 MGD - 340 MGD) left to accommodate growth on Oahu (DLNR, 1997).

City & County Planners have determined that by the year 2020, growth in the Ewa, Central, Waianae, and Honolulu districts will require another 90 MGD (56.5 MGD potable + 33.5 MGD non-potable). Therefore, based on land use plans, the groundwater supply may be completely utilized in 15 years (DLNR, 1997).

The current sustainable yield of the Pearl Harbor Aquifer Sector is 184 MGD which consists of 119 MGD for the Waipahu-Waiawa aquifer system, 20 MGD for the Ewa-Kunia aquifer system, and 45 MGD for the Waimalu aquifer system. These figures include the return flow of irrigation groundwater and Waiahole water in the Waipahu-Waiawa and Ewa-Kunia aquifer systems (DLNR, 1997).

A groundwater flow system and numerical simulation recently performed by the USGS, prepared in cooperation with the BWS, concludes that the effects of additional groundwater withdrawals and reduction of groundwater recharge from agricultural operations may reduce the water levels in all areas of the central Oahu flow system. The results of the simulation indicate that long-term pumping at the 1995-allocated rates may cause saltwater contamination problems to occur and increases in salinity at wells within the central Oahu groundwater flow system (USGS, 1998). The subject site is located in the central Oahu flow system.

3.0 EVALUATION OF POSSIBLE WATER SOURCES

3.1 WAIAHOLE DITCH WATER

General

The Waiahole Ditch and tunnel system consists of dike water development tunnels, surface water intakes, open ditches, gates, flumes, siphons, roads, trails, camps, support shops, etc. The system starts at Kahana Valley in windward Oahu, collects primarily groundwater and some surface water through

a series of development tunnels in the Koolau Mountains, and transports the non-potable water to Central and Leeward Oahu primarily for agricultural purposes. The average amount of water developed by the Waiahole Ditch System is approximately 27 MGD (DLNR, 1997).

Current Allocations

The State of Hawaii Department of Land and Natural Resources (DLNR), Commission of Water Resource Management (Commission) administers the State Water Code, Chapter 174C, Hawaii Revised Statutes (DLNR, 1997). The determination of the allocation of the Waiahole Ditch water is the responsibility of the Commission. The Commission recently released the "final decision" for the Waiahole Ditch Combined Contested Case Hearing which made water allocations to water use applicants. Table 2 summarizes the Waiahole Ditch water allocations made by the Commission.

Table 2. Waiahole Ditch System - Requested and Granted Uses

Landowner	Type of Use	Amount Requested	Amount Granted
Campbell	Agricultural	12.09	5.28
Robinson	Agricultural	5.50	2.49
Nihonkai	Agricultural	0.50	0.48
Dole/Castle & Cooke	Agricultural	2.22	2.12
Dole/Castle & Cooke/Robinson (Banana Patch Parcel - Eiko Nakama)	Agricultural	0.14	0.10
KSBE	Agricultural & Non-Agricultural	4.20	0.17
State of Hawaii (Waiawa Correctional Facility)	Non-Agricultural	0.15	0.15
Mililani Memorial	Non-Agricultural	0.14	0.14
Mililani Golf	Non-Agricultural	0.25	0.25
Royal Oahu Resort	Non-Agricultural	0.75	0.00
Puu Makakilo	Non-Agricultural	0.75	0.75
Department of Agriculture (Halekua)	Non-Agricultural	0.75	0.00
Waiahole Irrigation Company (for operational losses)	Non-Agricultural	2.00	0.00
West Beach Estates	Non-Agricultural	1.61	0.00
Total		31.08	11.93

Source: DLNR, 1997

In addition to the above listed allocations, the Commission also set up non-permitted waters which remain in Windward streams but some of which may be diverted to Leeward beneficial uses. The quantities which may be diverted include a 1.58 MGD "agriculture reserve" and a 5.39 MGD non-permitted groundwater "buffer" which is subject to permitting (DLNR, 1997). A regional park would likely be considered a beneficial use and could potentially be a recipient of a portion of the currently non-permitted buffer, based on discussions with DLNR. According to preliminary calculations provided to us, the proposed Waiola Park will require 0.73 MGD for irrigation of 180 acres.

To obtain water from the non-permitted "buffer" allocation, the landowner must file a water use permit application with the Commission. The permit application could be filed now, but requires the landowner's signature. This may be a factor in land acquisition negotiations and, therefore, the City may wish to wait until it acquires the land before filing a permit application.

The Waiahole final decision includes language urging that other sources be looked at first, particularly reuse of treated wastewater or use of other non-potable water for irrigation. The final decision also includes language about replacing Waiahole Ditch water with other sources as they come on line.

Existing Infrastructure

The site currently could receive Waiahole Ditch water through two gravity flow irrigation systems. One irrigation system consists of PVC piping owned and maintained by Dole. This system begins at a gate valve located west of the H2 Highway, within a pineapple field currently cultivated by Dole. The system runs south, underground through the pineapple field, and crosses Kamehameha Highway just north of the Ka Uka Boulevard Intersection (see Figure 5). The system then runs underground from the northern most point of the site to the intersection of concrete lined drainage ditches on the site (see Figure 3).

The second irrigation system consists of steel piping. Mr. Francisco Anagara, Jr. of Dole Food Company Hawaii reported that this irrigation system may have been owned and operated by the former Oahu Sugar Company (OSCO). The exact route of this system is not known. This system is believed by Dole to begin northeast of the Mililani Memorial Park/Cemetery (see Figure 5), to cross beneath H2 Highway, and to run underground through a pineapple field currently cultivated by Dole. The steel piping has been exposed in some sections of the field due to pineapple cultivation operations. The steel piping then crosses Kamehameha Highway just north of the Ka Uka Boulevard Intersection and is believed to run underground to a pump house near the BWS water tanks

on the west side of the subject site. It is believed that this water is currently being used to irrigate the Waikele area (Dole, 1998).

During site visits, we noted two ditches on the subject site, although neither appears to be currently used. The first ditch enters from the northwest near the two existing water tanks and is oriented east-west, extending across the site to Kamehameha Highway (Figure 3). This ditch did not contain water during our site visit. The ditch is lined with mortar and, although overgrown by vegetation in some areas, appears to be in fairly good condition.

The second ditch begins approximately half-way along the first ditch, is oriented north-south, and extends to the site's south border to a reservoir (Figure 3). Access to this ditch was limited by heavy vegetation growth. This second ditch also did not appear to contain water, and the condition of the ditch over most of its length is not currently known.

To use Waiahole Ditch water, the City would need to obtain access to the irrigation system currently operated by Dole or potentially the system formerly operated by OSCO. Extensive rehabilitation of the OSCO transmission system may be required. On-site ditches may or may not be incorporated into the park design, but may also require rehabilitation if they are to be used. If use of the Dole or OSCO transmission lines are not feasible, a new water transmission system may need to be constructed to tie into the Waiahole Ditch.

3.2 EXISTING AGRICULTURE ALLOCATIONS OF WAIAHOLE DITCH WATER

The issue of possibly taking over some of OSCO's existing agriculture Waiahole allocations appears to be a "long shot" since the site is not currently an OSCO site. In addition, the Commission has already ruled that conversion from agriculture to golf course use would be a change in use requiring application to the Commission. The State Water Commission, however, has not yet made such a determination on conversion from agriculture to park use.

Under the final decision, Dole/Castle & Cooke applied for 2.22 MGD to irrigate 1552 acres of agricultural land, and received 2.12 MGD. It is not clear how much or any of this allocation was intended irrigating the fields for the proposed Waiola Park site, but if the subject site's 269 acres were to receive a proportionate amount of the total water allocated for 1552 acres, then the site's allocation would be approximately 0.37 MGD. This allocation would not supply sufficient irrigation water for the Park based on the preliminary calculations which indicate an irrigation requirement of 0.73 MGD.

In addition, Waiahole Ditch water not used by Dole/Castle & Cooke would likely be placed in the agricultural reserve since they acquired the water for agricultural use. Unless the water allocation is transferred to the City & County along with the property and the State Water Commission approves the conversion from agriculture to park use, the Waiahole Ditch water currently allocated to Dole/Castle & Cooke cannot be used for park irrigation.

3.3 GROUNDWATER DEVELOPMENT

The Pearl Harbor Aquifer is under the control of the State Water Commission because groundwater development is at or near the sustainable yield of the aquifer. Roy Hardy of the Commission informed us that there are approximately 55-60 MGD of OSCO allocations which are nearing forfeiture because of non-use for four years. Mr. Hardy stated that approximately one-third to one-half of the OSCO allocations would be made available in 1999.

However, there is a long list of applicants for this water and, based on discussions with DLNR, the BWS has applied for almost all of the water which may become available and will likely be given first priority. The Commission is currently reexamining the sustainable yield, since much of OSCO's allocation was applied to fields and recharged the aquifer. If the water was converted to domestic BWS use, there would be less aquifer recharge and the sustainable yield would be expected to drop as indicated in the numerical simulation recently conducted by the USGS (USGS, 1998).

The likelihood of obtaining permission to install and permanently operate wells at the site is low based on the higher priority of the BWS and based on the high likelihood that the sustainable yield of the aquifer will likely be reduced because of the reduced recharge from Waiahole and other irrigation water. However, temporary use of groundwater may be possible since the BWS requests for the OSCO allocation are at least partly based on future growth projections (Sakoda, 1998).

Groundwater development at the site can be pursued by filing a water use permit application and a well construction permit application with the Commission. Both applications, however, require the landowner's signature. This may be a factor in land acquisition negotiations and, therefore, the City may wish to wait until it acquires the land before filing the permit applications.

3.4 EXISTING BWS ALLOCATION

We understand that the BWS has already rejected using part of their current water allocation for irrigation of the park. The BWS, however, would be willing to provide water for domestic and potable uses within the park.

3.5 FUTURE BWS ALLOCATION

We understand that Walters, Kimura, Motoda, Inc. are investigating whether the Waiola park irrigation requirements can become part of the BWS current application for additional water from the Pearl Harbor aquifer.

3.6 RECLAIMED WATER (TERTIARY TREATED EFFLUENT)

Regulatory Concerns

The State of Hawaii Department of Health (DOH) and BWS have requirements and/or objections to the use of reclaimed water in Central Oahu, based on testimony provided for the Waiahole contested case hearings.

Use of reclaimed water is subject to the DOH "Guidelines for the Treatment and Use of Reclaimed Water" (DOH, 1993). The guidance specifies that R-1 (tertiary-treated) water may be used for irrigation of parks, elementary school yards, and athletic fields, and that R-2 (secondary-treated) effluent is not suitable for irrigation of parks and athletic fields. R-1 water is not currently available from Oahu's WWTP sources.

If a source of tertiary-treated water could be secured, approval to use tertiary effluent for irrigation over the Pearl Harbor Aquifer would need to be obtained from DOH and BWS. The DOH guidance for reclaimed water states that "if any portion of the irrigated or wetted area of the proposed use area is located over an aquifer designated for public drinking water supply, the maximum monthly average application rate shall be calculated with the percolation component equal to zero". In other words, the application of reclaimed water may be allowed to the extent that it is balanced by evapo-transpiration and uptake by plants. The guidance states that recharge to the aquifer by reclaimed water is not permitted.

BWS objects to the use of reclaimed water over potable aquifers until more information is obtained about the potential effects of reclaimed water use over potable aquifers. The site is located in a "No Pass Zone", where R-1 water for irrigation will not be supported by BWS because the R-1 water will be

recharging the aquifer (Higashi, 1998). BWS's major concern is the level of chloride that will be recharged into the Pearl City aquifer. BWS allows a maximum of 160 parts per million (ppm) chloride (Higashi, 1998). We understand, however, that reclaimed water has been used above potable aquifers in other areas of the County (e.g., Waialua) and the State (e.g., Lanai) (Hardy, 1998).

Potential Reclaimed Water Sources

A source of reclaimed water would need to be identified and infrastructure to support the transport of the reclaimed water to the site would need to be designated and built. There are three possible sources of reclaimed water in the vicinity of the site: (1) Schofield Wastewater Treatment Plant (WWTP); (2) Wahiawa WWTP, and (3) Honouliuli WWTP.

We understand that the Army is currently considering either adding tertiary treatment to the wastewater stream at Schofield WWTP or sending the wastewater down to the Honouliuli WWTP for treatment. If tertiary treatment is added to Schofield WWTP, the reclaimed water may be available for use at the park site. The effluent, however, would be under control of the Army and there may be other competing uses (U.S. Army, 1998). Additionally, infrastructure would be needed to transport the reclaimed water to the site.

We understand that the City is also considering adding tertiary treatment to Wahiawa WWTP, which could then become a source of reclaimed water for the park site. Effluent chloride levels at the Wahiawa WWTP are 50 to 60 ppm (Higashi, 1998) which is below the 160 ppm allowed by BWS. Again, infrastructure would be needed to transport the reclaimed water to the site.

If the wastewater from either Schofield WWTP or Wahiawa WWTP is sent to Honouliuli for tertiary treatment, then Honouliuli effluent could be a source of irrigation water for the park. However, the reclaimed water that will be processed at the Honouliuli WWTP may be dedicated to the Ewa caprock project (DLNR, 1997). In addition, the effluent chloride levels at the Honouliuli WWTP are approximately 300 ppm (C&C, 1998c) which is greater than 160 ppm maximum that may allowed by BWS over a potable aquifer (Higashi, 1998).

In addition, transportation and pumping of the reclaimed water from the Honouliuli WWTP, situated at a lower elevation of 45 feet mean sea level, to the site, at an elevation range of 600 to 800 feet, would likely be costly to construct, operate, and maintain.

4.0 SUMMARY

A summary of the evaluation of each potential water source including items required by various permitting agencies is presented in Table 3. An additional summary discussion of the three water sources that we consider to be most feasible, i.e., Waiahole Ditch water, groundwater, and reclaimed water, is presented below.

4.1 WAIAHOLE DITCH WATER

From an infrastructure standpoint, Waiahole Ditch water is preferred since infrastructure delivering water to the site is already in place (i.e. one of two pipe systems), and because the pipe systems are gravity flow systems requiring no energy expenditures to deliver water to the site. However, both of the irrigation systems that direct the Waiahole Ditch water to the subject site are owned and operated by private agricultural developers and pass through pineapple fields owned by Dole. The City would need to apply for an easement through Dole's pineapple fields and either work out an agreement with Dole or OSCO for the use or purchase of their irrigation systems.

Due to the depleting groundwater supply on Oahu, Waiahole Ditch water is in great demand. Most applicants were not allotted the requested amount of Waiahole Ditch water (see Table 1). The City may file a water use permit application for the non-permitted "buffer" allocation, however; there is no guarantee that the Commission will grant 0.73 MGD to irrigate the Waiola Park site. In addition, the final decision includes language urging that other sources be looked at first, particularly reuse of treated wastewater or use of other non-potable water for irrigation.

4.2 GROUNDWATER DEVELOPMENT

Approval for development of a groundwater source for permanent irrigation use at the site would almost certainly be denied by the Commission, due to the limited and declining sustainable yield of the Pearl Harbor Aquifer and the likely priority that will be given to BWS requests for soon-to-be available allocations. However, temporary use of groundwater may be possible since the BWS requests for the OSCO allocation are at least partly based on future growth projections.

Groundwater development would require funding for the design, construction, operation, and maintenance of groundwater wells.

4.3 RECLAIMED WATER

We understand that the City is interested in using reclaimed water for the irrigation of the proposed Waiola Park. This option requires: 1) design of an irrigation system which complies with DOH "Guidelines for the Treatment and Use of Reclaimed Water," 2) approval from DOH and BWS, 3) securing of a source of tertiary-treated reclaimed water, and 4) developing infrastructure for the transport of the reclaimed water to the Waiola Park site.

Approval from BWS for application of reclaimed water above an aquifer may be difficult, and may require additional study. DOH guidelines allow for application of reclaimed water to the extent that it is balanced by evapotranspiration and uptake by plants. Recharge to the aquifer by reclaimed water is not permitted by DOH guidelines.

In addition, a source of tertiary-treated reclaimed water would need to be determined. Infrastructure will also be needed to transport the reclaimed water to the site.

4.4 EVALUATION FACTORS

Evaluation of the possible water source options includes consideration of availability (immediate and long term), relative costs, and regulatory concerns.

Availability (Immediate and Long Term)

The Waiahole Ditch water and groundwater could both be available relatively quickly (assuming that permitting and/or easement issues are resolved) and could meet requirements for the proposed Park in the near term. Infrastructure for the Waiahole Ditch water is already in place, and groundwater facilities could be constructed relatively quickly.

The use of reclaimed water would appear to require the resolution of issues on water source, regulatory objections, and construction of extensive infrastructure which would likely significantly delay the availability of irrigation water. This source, however, would appear to be one which would be highly likely to become available in the longer term.

Relative Costs

Depending upon whether significant costs would be involved in obtaining easements or purchase of the one of the two existing piping systems to the site, costs to use Waiahole Ditch water may also likely be relatively low. Water use

fees to Waiahole Irrigation Company or a successor company would be required, as well as costs of maintaining one of the existing piping systems.

The costs involved in using groundwater would be relatively low, consisting mainly of initial drilling costs in installing a primary and backup well on the site, and long term costs for pumping and maintenance.

The costs involved in constructing treatment facilities and infrastructure to bring reclaimed water to the site would likely be significantly higher than either the Waiahole Ditch or groundwater options. However, we understand that tertiary treatment systems may be planned in order to bring City waste streams into compliance with State and Federal laws. The cost of constructing a transmission system to the site may also be balanced by the City's need to dispose of tertiary-treated effluent.

Regulatory Issues

The use of Waiahole Ditch water would require an allocation from the groundwater "buffer" established by the recent Commission "final decision". The proposed use would clearly be a beneficial use and would appear to have as good or better chance as any other application for use of the groundwater "buffer". Recent history, however, would suggest that any such applications to the Water Commission would likely be controversial and may be contested. The Water Commission is required to act within six months on such applications.

The use of groundwater would require an allocation from the Commission, and approval of groundwater as a permanent irrigation source appears to be highly unlikely. However, it may be possible to obtain approval to develop a groundwater source for temporary use.

The use of reclaimed water is covered under current DOH regulations and it would appear that the requirements under the regulations could be met. The main regulatory issue requiring resolution would appear to be the objections of the BWS to the application of reclaimed water over drinking water aquifers without further study, and the BWS limitations on chloride content, which may rule out some reclaimed water sources.

Table 3
Potential Water Source Evaluation Summary

Possible Water Source	Permitting Agency	CAC (Various Dept)	DOH (Various Dept)	DLNR	U.S. Army	Possible Sources? What's Needed?
Waiahole ditch water	BWS Approval of Water Use Permit	Approval of Water Use Permit	None	Application for Water Use Permit from the DLNR Commission on Water Resources Management (forwarded to other agencies for approval)	None	Yes; 1) Water Use Permit Needed; 2) easement from Dole to run Waiahole water through their lands; 3) agreement with Dole or OSCO to use their irrigation system
Groundwater development	Approval of Water Use Permit	Approval of Water Use Permit	None	Application for Water Use Permit & Well Construction Permit from the DLNR Commission on Water Resources Management (forwarded to other agencies for approval)	None	Yes; 1) Water Use Permit Needed; 2) Well Construction Permit Needed
Existing BWS water allocation	Approval from BWS net gain	Comply with BWS Regulations	None	Comply with BWS Regulations	None	No
Future BWS water allocation	Approval from BWS required; Water, Kaimosi, Maunaloa, etc. are handling communications with BWS	Comply with BWS Regulations	None	Comply with BWS Regulations	None	No (currently)
Reclaimed water (tertiary treated effluent)	Operated by BWS over existing water aqueduct; until proof is given that the use of reclaimed water will have no adverse effects on the existing water aqueduct below the site	Must use water source from a higher elevation to have lower chloride levels and use 80% ET to ensure 100% absorption of infiltrate during irrigation (Wastewater Branch)	Comply with "Guidelines for the Treatment and Use of Reclaimed Water" from DOH Wastewater Branch	Comply with DOH and BWS Regulations	Follow State "Guidelines for the Treatment and Use of Reclaimed Water"	Yes; 1) follow "Guidelines for the Treatment and Use of Reclaimed Water"; 2) approval from DOH and BWS; 3) source of reclaimed water needed; 4) infrastructure for reclaimed water needed
Using over existing agriculture groundwater allocation	Cross Connection Control needed from Customer Service; usually needed when applying for a building permit	None	None	Any Waiahole water not used by Ceres & Cooke on the site will be placed in the Agriculture Reservoir. Thus, would be better to apply for the unpermitted buffer.	None	No; water currently routed to site is for AGRICULTURAL USE ONLY; any water not used will be transferred into the agricultural reservoir

5.0 RECOMMENDATIONS

General

Possible water sources for the proposed Waiola Regional Park and Sports Complex are the Waiahole Ditch water, groundwater development, and reclaimed water. Each possible water source has some degree of uncertainty involved, based on the time frame of availability and based on whether the potential source will ultimately become a viable source.

The Waiahole Ditch water appears to have the most likelihood of being available in the near term, and the use of reclaimed water appears likely to become available in the longer term. Although the probability of permanently obtaining a groundwater allocation appears low, we recommend that this option also be pursued, as a possible temporary source of near term water.

We therefore recommend that a combined approach be utilized, with Waiahole water and reclaimed water as the primary sources to be pursued. This would allow use of water sources which are likely to be available on a more timely basis, such as Waiahole Ditch water and groundwater, with future reductions in use of these two sources as reclaimed water become available.

Recommended Course of Action

The most likely source of water which could be available within the relatively short time frame available for the initial phase of park development would be Waiahole water. We therefore recommend that an allocation of Waiahole water from the groundwater "buffer" be applied for. We also recommend negotiations be started for an easement through Dole pineapple fields; and an agreement with either Dole or OSCO for the use or possible purchase of their irrigation pipe systems. We also recommend that the civil engineer undertake a detailed review of the existing systems to evaluate and design modifications and/or upgrades necessary to implement use of the Waiahole water.

As a backup, we recommend applying for a temporary groundwater allocation. Although a permanent groundwater allocation is unlikely, a temporary allocation may be possible since OSCO's existing groundwater allocation is not being used, and some time would be required before all groundwater allocations being applied for by BWS could be developed and brought on line. It may not be necessary for BWS to develop all of the groundwater allocations immediately as future growth is factored into the BWS groundwater allocation applications. For this backup option, we recommend

proceeding with design of a groundwater well system, incorporating the design into a well construction permit application, and applying for a temporary groundwater use permit.

Reclaimed water would not likely become available within time frames required for the first phase of park development. We therefore recommend that actions be taken to later incorporate the use of reclaimed water into the irrigation system for the park. This would be useful in demonstrating to the Commission a commitment to eventually reducing reliance on the Waiahole Ditch water, as recommended in the "final decision".

As reclaimed water becomes available, reclaimed water could be diluted with either Waiahole Ditch water and/or groundwater from the site. This may aid in obtaining approval from BWS for the application of reclaimed water over a drinking water aquifer, as BWS chloride level requirements could be more easily met.

To implement this option, the design and construction of the park's irrigation system should be planned in compliance with DOH "Guidelines for the Treatment and Use of Reclaimed Water". This would allow flexibility in changing irrigation water sources in the future. At the same time, the City should seek approval from DOH and BWS for use of reclaimed water over a potable aquifer; determine a source of reclaimed water; and plan and design infrastructure for the transport of reclaimed water to the site.

APPENDIX B
CIVIL BASIS OF DESIGN

WAIOLA REGIONAL PARK AND SPORTS COMPLEX

94-2689 Paiwa Street
TMK 9-4-5: 74
Waipio, Oahu, Hawaii

CIVIL BASIS OF DESIGN

Prepared by:

SSFM Engineers, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

March 16, 1998

CIVIL BASIS OF DESIGN

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I. Utilities

A. Water System

1. Domestic (Potable) Water

a) Existing Supply

- (1) Source: This project is located in a 595' Elevation Reservoir Service Area. According to the Board of Water Supply (BWS), the proposed potable water demands can be provided from this reservoir.
- (2) Point of Connection: The on-site potable water distribution system will connect to two (2) existing 12" water main on the east side of Kamehameha Highway, opposite of the project site. One water main is located under Ka Uka Blvd. and the other is located under Waipio Uka Street.

b) Domestic Water Demands: See Table 1 for the domestic water demands per phase. Calculations are presented in Appendix A.

PHASE	DEMAND (gpd)
PHASE I	2,700
PHASE II	4,500
PHASE III	1,600
PHASE IV	5,300
TOTAL	14,100

Table 1: Domestic Water Demands

c) On-Site Water Distribution System

- (1) The layout of the on-site distribution system is illustrated in Figure 1, Water Master Plan. It is recommended that the water system be dedicated to BWS and become a "public" system and an easement created in favor of BWS. BWS requires the system to be looped with a 12" main connected at both ends in the 595' reservoir service area.

- (2) The minimum water main size will be 8" diameter. Lateral sizes will be controlled by the fire protection requirements.
- (3) Distribution lines will be located under roads and paved areas for access, maintenance, and protection.
- (4) Each facility will have a separate water meter.

2. Fire Protection

- a) On-site fire protection is under the jurisdiction of BWS because it is considered a "public" system. The fire hydrant layout is shown on Figure 1, Water Master Plan.
- b) Fire Hydrant Spacing:
 - (1) Access Roads: 700 feet.
 - (2) Around Structures: 250 feet. Building complexes, such as the Community and Aquatic Center, will have fire lane access to the side of the structure where fire hydrants are not provided. The fire lane access will be 20 feet wide with a 13.5 feet minimum vertical clearance.
 - (3) Main Parking Lot along Kamehameha Highway: 350 feet. This increased level of fire protection is recommended since "tailgate parties" increase the risk of fires in the parking lot.
 - (4) Concession Stand: A fire hydrant will be located near the concession stand at the center of each ball field grouping.

3. Irrigation (Non-Potable) Water

- a) Waipio Heights Wells II may be available as a temporary source of irrigation water. The wells are located on the east side of Kamehameha Highway just north of Ka Uka Boulevard at TMK 9-4-99:43. BWS has a water use permit for 500,000 gpd, however the pesticide levels are too high for domestic consumption. A transmission main

would need to be constructed to convey the irrigation flows to the project site.

BWS does not presently have the means to treat the water, but treatment works are currently in design. The treatment work will be located at the BWS facility near the Waipio Uka entrance of the project site. The proposed transmission line will be used for irrigation from the wells for approximately 2 to 3 years until the treatment works are online. BWS will then use the Waipio Heights Wells II for potable water. The transmission main constructed to convey irrigation water to the project site will then be abandoned.

- b) Other Sources (See Masa Fujioka's report)

B. Wastewater Collection System

1. Downstream Facilities

a) Point of Connection:

(1) Kamehameha Highway: The proposed wastewater flows will be directed to an existing 18" gravity sewer which crosses Kamehameha Highway just south of the site. This gravity sewer is designated "Gentry Waipio Off-Site Sewer System, Phase II" on the Wastewater Collections System Plan. It is 450 lineal feet long, with a slope of 1.15%. This portion of the line is currently at capacity and can not accept more wastewater flows. Under this project, either a relief (parallel) line will be constructed or the existing 18" line will be replaced with a larger gravity sewer.

(2) Paiwa Road: Although there is an 8" gravity sewer which terminates near the end of Paiwa Road, it does not have available capacity. There is another 8" gravity sewer which terminates at the freeway interchange (near Eagle Hardware in Waikele Center) which has available capacity. However, this line terminates approximately 4,000 lineal feet from the project site boundary. It is not recommended to connect the onsite sewer to the

sewer system along Paiwa Road because of the long sewer runs and associated high construction costs.

- (3) Permits Required: A "Sewer Connection Permit" is required to connect to the wastewater collection system.
- b) The capacity at Waipahu Wastewater Pump Station will not be a limiting factor for this project as the Department of Wastewater Management (WWM) plans to improve the pump station before this project is constructed.

2. Wastewater Demands:

Projected average, maximum, and peak flows (per phase) are presented in Table 2. Calculations are presented in Appendix A.

PHASE	PROJECTED DESIGN FLOWS (gpd)		
	AVERAGE	MAXIMUM	PEAK
PHASE I	2,600	10,600	15,600
PHASE II	4,400	18,000	22,100
PHASE III	1,600	6,500	9,300
PHASE IV	5,200	21,200	22,700
TOTAL	13,800	56,300	69,700

Table 2: Wastewater Demands

3. On-Site Wastewater Collection System

- a) The layout of the Sewer Master Plan is illustrated in Figure 2. The on-site collection system will be considered a "private" system, owned by the Department of Parks and Recreation. The design will conform to the Uniform Plumbing Code.
- b) The on-site collection system will be the combination of three different types of collection systems.
 - (1) A "cleanout collection system" comprised solely of small diameter lines with cleanouts, designed according to the Uniform Plumbing Code, will be used for long lateral runs to minor facilities.

- (2) A 8" minimum diameter sewer lines with manholes designed according to the standards established by WWM, will be used for the main collection lines.
- (3) Low Pressure Sewer System (LPSS): A LPSS consisting of Individual Pumping Stations (IPS) that discharge to a low pressure sewer line will be used to collect wastewater from the lower elevations of the site to the upper elevations of the site. The IPS consists of a small grinder pump with a wet well. The collection lines are small diameter (usually less than 2") and are buried with the minimum cover allowed. The sewer line profile parallels the finish grade. The LPSS connects to the gravity system at a manhole with a submerged discharge.

C. Storm Drain System

1. Discharge Points

- a) Kipapa Gulch: Stormwater runoff flows overland (surface flow) from the project site to Kipapa Gulch.
- b) Diversion Ditch: A diversion ditch was constructed along the southern boundary of the project site to protect the residential development below. This ditch discharges into the existing storm drain system at Paiwa Street.
- c) Retention Basin: There is a retention basin just south of the project site. This basin was used in the past as an irrigation reservoir storing water from the Waihole Water System. It is presently under the control of Waikele Golf Club, Inc. and functioning as a siltation basin. Overflow from this basin enters the golf course storm drain system through an inlet on the north side of Lumi'au'au Street. Special arrangements must be made between the City and County of Honolulu and Waikele Golf Club, Inc. for the future use of this basin. It is recommended that the basin continue to be used as a siltation basin during construction and as a permanent retention basin for stormwater runoff from the Waiola site.

- d) Existing Storm Drainage System: Stormwater runoff from the southernmost drainage basin of the site enters an existing storm drainage system in the adjacent residential development.
- e) Permits Required: A "Storm Drain Connection Permit" will be required to connect to any existing storm drain system.

2. Existing Storm Runoff Analysis

- a) Design Flows: Park Engineering prepared the "Preliminary Drainage Report for Waiola Estates" (a residential subdivision) in February 1989. The drainage basins and stormwater runoff flow rates were calculated assuming the project site was developed as residential. These results of their calculations are presented in Table 3. The layout for the drainage basins are illustrated in Figure 3, Grading and Drainage Master Plan.

DRAINAGE BASIN	AREA (AC)	FLOW (CFS)
Sub Area A	26	62
Sub Area B	171	402
Sub Area C	13	30
Sub Area D	18	43
Sub Area E	41	97
TOTAL	269	634

Table 3: Waiola Estates Storm Runoff Summary

These design flows were the basis for the design of the drainage systems downstream of the project site.

- b) Downstream Facilities: The "Preliminary Drainage Report for Waiola Estates" was used by Community Planning, Inc. in preparing the "Drainage Report for Waikele Golf Course" in June 1990 and the "Waikele Golf Course - Upper Reservoir Drainage Calculations" in August 1996. The downstream drainage system was designed to accommodate these design flows.

3. Proposed Storm Runoff Analysis

- a) **Design Flows:** The runoff coefficient for the Waiola Estates subdivision (a residential subdivision) is approximately (0.65). The runoff coefficient for this project which consists mainly of open grassed areas and parks is approximately (0.20) which will result in the proposed flows from Waiola Regional Park and Sports Complex to be less than the flows that the downstream drainage systems were designed to accommodate. The proposed storm runoff summary are presented in Table 4. Calculations are presented in Appendix A.

DRAINAGE BASIN	AREA (AC)	FLOW (CFS)
Sub Area A	25	18
Sub Area B	59	43
Sub Area C	85	62
Sub Area D	17	12
Sub Area E	83	60
TOTAL	269	195

Table 4: Proposed Storm Runoff Summary

4. On-Site Storm Drainage System

- a) **Description:** The proposed drainage system will emphasize surface sheet flow, avoiding inlets and pipes to the greatest extent practicable. Stormwater runoff from impervious surfaces will be directed to grassed swales. Existing drainage patterns will be preserved where practicable. The stormwater flow will be dispersed instead of concentrated at discharge points.
- b) **Best Management Practices**
- (1) **Construction**
- (a) Use silt fences and controlled ingress/egress to prevent construction debris from migrating off-site.
- (b) Use temporary erosion control measures during construction and plant permanent landscaping as soon as finish grades are established.

- (c) Schedule mass grading to avoid the rainy season. Open no more than 15 contiguous acres for grading at a time.
- (2) **Operations**
- (a) Runoff from the parking lots will be directed to grassed swales or inlets with filters to prevent petroleum contamination (from vehicles) from entering the storm drain system.
- (b) The landscape maintenance department will monitor the use of fertilizers, pesticides, and herbicides.
- (c) Wash water from vehicles and maintenance equipment will be directed to the wastewater system
- (d) It has not been yet determined who will assume maintenance responsibility for the diversion drainage channel on the southwest project boundary adjacent to the residential development. Further investigations are required.

II. Infrastructure

A. Roads

1. Passenger Vehicles

- a) The minimum lane width will be 12 feet. There will be no curbs and gutters along the roadways and parking areas, due to budget constraints.
- b) The main access is from Kamehameha Highway. An alternate access is also provided from Paiwa Road.

2. Public Transportation

- a) The bus drop off lane width will be 16 feet.

- b) A bus loading area will be provided.

B. Parking

1. Approximately 2,700 standard parking stalls with wheel stops will be provided. The standard stall size will be 8.5' x 16', which allows for a 3' overhang. No compact stalls are included in the design.
2. Parking lots will have a minimum slope of 0.5% and a maximum slope of 5.0%.

C. Walkways

1. The minimum walkway width will be 6 feet.
2. Walkways will have a maximum slope of 5.0%.

D. Accessibility

1. Accessible parking stalls will be provided.
2. Accessible routes will be provided to public facilities.

III. Grading

A. Playing Fields

1. Playing fields will have a minimum slope of 1.15% and a maximum slope of 1.25%.

B. Excavation and Embankment

1. Side cut and fill slopes will have a maximum slope of 3 horizontal: 1 vertical.
2. Earthwork quantities are presented in Table 5.

PHASE	EXCAVATION (cy)	EMBANKMENT (cy)	NET (cy)
PHASE I	228,700	330,600	101,900 (F)
PHASE II	288,400	74,100	214,300 (C)
PHASE III	78,700	247,100	168,400 (F)
PHASE IV	150,500	1,700	148,800 (C)
TOTAL	746,300	653,500	92,800

Table 5: Earthwork Quantities

APPENDIX C
TRAFFIC IMPACT STUDY

TRAFFIC IMPACT ASSESSMENT REPORT

FOR

CENTRAL OAHU REGIONAL PARK

June 1998

Waipio, Oahu, Hawaii

Prepared for:

Walters, Kimura, Motoda, Inc.

Prepared By:

**Pacific Planning & Engineering, Inc.
1221 Kapiolani Boulevard, Suite PH 60
Honolulu, Hawaii 96814**

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FOREWORD

The traffic forecasts shown within this report's figures and tables are the direct result of Pacific Planning & Engineering, Inc.'s proprietary analytical tools. For report editing and review purposes, all of the forecast values have been rounded to the nearest five vehicles from our mathematical results, although we do not imply this level of accuracy can exist in any forecast method. The rounded values, however, reasonably quantify the forecasted traffic volumes for the purposes of this study.

The report deals with traffic volumes and roadway capacity, and is not a design document. No conclusions of traffic safety are stated or implied. Recommendations of mitigation actions relate solely to capacity improvements to reduce or minimize traffic delays. Analytical methods are based on the 1994 edition of the Highway Capacity Manual.

EXECUTIVE SUMMARY

Pacific Planning & Engineering, Inc. (PP&E) was engaged to identify and assess potential future traffic impacts that would be caused by the proposed Central Oahu Regional Park in the year 2005.

Project Description

The City and County of Honolulu is proposing a 269 acre regional recreational park in Waipio, Oahu, Hawaii. The proposed project is located along Kamehameha Highway across from the Waipio subdivision and is identified by Tax Map Keys: 1-9-4-05:74.

The proposed Central Oahu Regional Park is anticipated to be completed by the year 2005 and includes the following facilities:

- Professional Baseball Complex
- Tennis Complex
- Aquatic Center
- Four (4) Youth Baseball Fields
- Four (4) Softball Fields
- Two (2) Soccer Fields
- Eight (8) Basketball Courts
- In-Line Hockey Facility
- Skateboard Park
- Boxcar Stadium and Track
- Community Center
- Passive park
- A Multi-Purpose Fields
- Five (5) Sand Volleyball

The Professional Baseball complex includes a 4,000 seat baseball stadium and 6 baseball fields with 100 seat bleachers for each field. The Tennis complex consists of a stadium court, four show courts with approximately 500 seats, four clay or fast dry softcourts and sixteen standard courts. The Aquatic center accommodates the full range of swimming needs from training and competitive events to individual recreational use.

Access to the project will be via extensions of Ka Uka Boulevard, Waipio Uka Street and Palwa Street. There will be about 2,400 parking spaces located at various locations throughout the site.

Methodology

Traffic analysis was conducted at the following intersections to determine the impact of the proposed project on the adjacent roadways:

- Ka Uka Boulevard with Kamehameha Highway.
- Ka Uka Boulevard with Ukee Street.
- Waipio Uka Street with Kamehameha Highway.
- Lumiaina Street with Kamehameha Highway.
- Lumiauu Street with Kamehameha Highway.
- Walpahu Street with Kamehameha Highway.
- Lumiaina Street with Palwa Street.
- Palwa Street with H-1 Eastbound offramp and
- Palwa Street with H-1 Westbound offramp.

Future traffic was forecasted by adding the following:

- existing traffic volumes at the study intersections,
- traffic generated by other potential developments in the area,
- the increase in through traffic and
- traffic generated by the proposed project.

This study assesses the impact on the study intersections by determining the level-of-service (LOS) for:

- existing traffic volumes,
- Year 2005 forecast without project and
- Year 2005 forecast with the project.

Conclusions and Recommendations

The proposed Central Oahu Regional Park will have an impact on traffic flow at the study intersections when it is completed in the year 2005. Laneage recommendations for each study intersection are described below and shown on Figure 43.

Kamehameha Highway with Ka Uka Boulevard

The addition of an eastbound leg at this intersection would result in reduced levels-of-service (LOS). However, with the recommended laneage configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- An exclusive left-turn lane, a through lane and an exclusive right-turn lane on the westbound leg of Ka Uka Boulevard.
- An exclusive left-turn lane, a through lane and a shared through and right-turn lane on the eastbound leg of Ka Uka Boulevard.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Ka Uka Boulevard with Ukee Street

There would be additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Kamehameha Highway with Waipio Uka Street

The addition of an eastbound leg at this intersection would result in reduced levels-of-service (LOS). However, with the recommended laneage configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- One shared through/right-turn lane with double left-turn lanes on the westbound leg of Ka Uka Boulevard.
- One through lane with separate left- and right-turn lanes on the eastbound leg.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Kamehameha Highway with Lumlaina Street

Currently, motorists turning left from Lumlaina Street to northbound Kamehameha Highway experience LOS F conditions during all three study periods. This is caused by the heavy left-turn traffic volume (a.m. - 353 vehicles, p.m. - 409 vehicles, Sat - 477 vehicles). The LOS F condition will continue in the future without or with the project. A possible method to improve this condition would be to modify the signal timing to give more time to Lumlaina Street. Another method would be to separate the eastbound and westbound phases along Lumlaina Street which would eliminate existing left-turn conflicts.

Kamehameha Highway with Lumlauau Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Kamehameha Highway with Waipahu Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Lumlaina Street with Palwa Street

Motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Palwa Street with Westbound Off-Ramp (Palwa Interchange)

Currently motorists turning right from the off-ramp to Palwa Street experience long delays, LOS F, during the afternoon and mid-day study periods. The observed maximum vehicle queue was 21 vehicles which was contained in the provided storage lane. Motorists would experience additional delays caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Palwa Street with Eastbound Off-Ramp (Palwa Interchange)

During the weekday morning and afternoon peak hours, motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

During the weekend mid-day peak hour, there are 449 left-turns being made from the eastbound off-ramp. Observed queues of 16 vehicles occurred several times during the peak hour. The Highway Capacity Manual states that double

left-turns be considered when left-turn traffic volume exceeds 300 vehicles per hour.

With the project, the forecasted left-turn volume on the eastbound off-ramp is expected to increase to 645 vehicles. Although the level-of-service indicates LOS D, double left-turn lanes should be considered to reduce the possibility of vehicles queuing onto the freeway. Double left-turn lanes at this intersection can be accommodated within the existing right-of-way.

Special Events

Since the recommendations are based upon probable day-to-day events, large events such as a major baseball game in the 4,000 seat stadium, special traffic controls should be implemented if necessary. The traffic control could be similar to what is done for the Special Events Arena at the University of Hawaii and at Aloha Stadium. Examples of such controls include the use of traffic control personnel and coning.

Phase 1 Improvements

The recommended improvements described above are for full build-out conditions. The Central Oahu Regional Park will be constructed in several phases. Phase 1 will consist of general recreational uses (i.e. baseball, soccer and multi-purpose fields). Access will be via Waipio Uka Street only, therefore, roadway improvements for Phase 1 would be those described earlier for Waipio Uka Street.

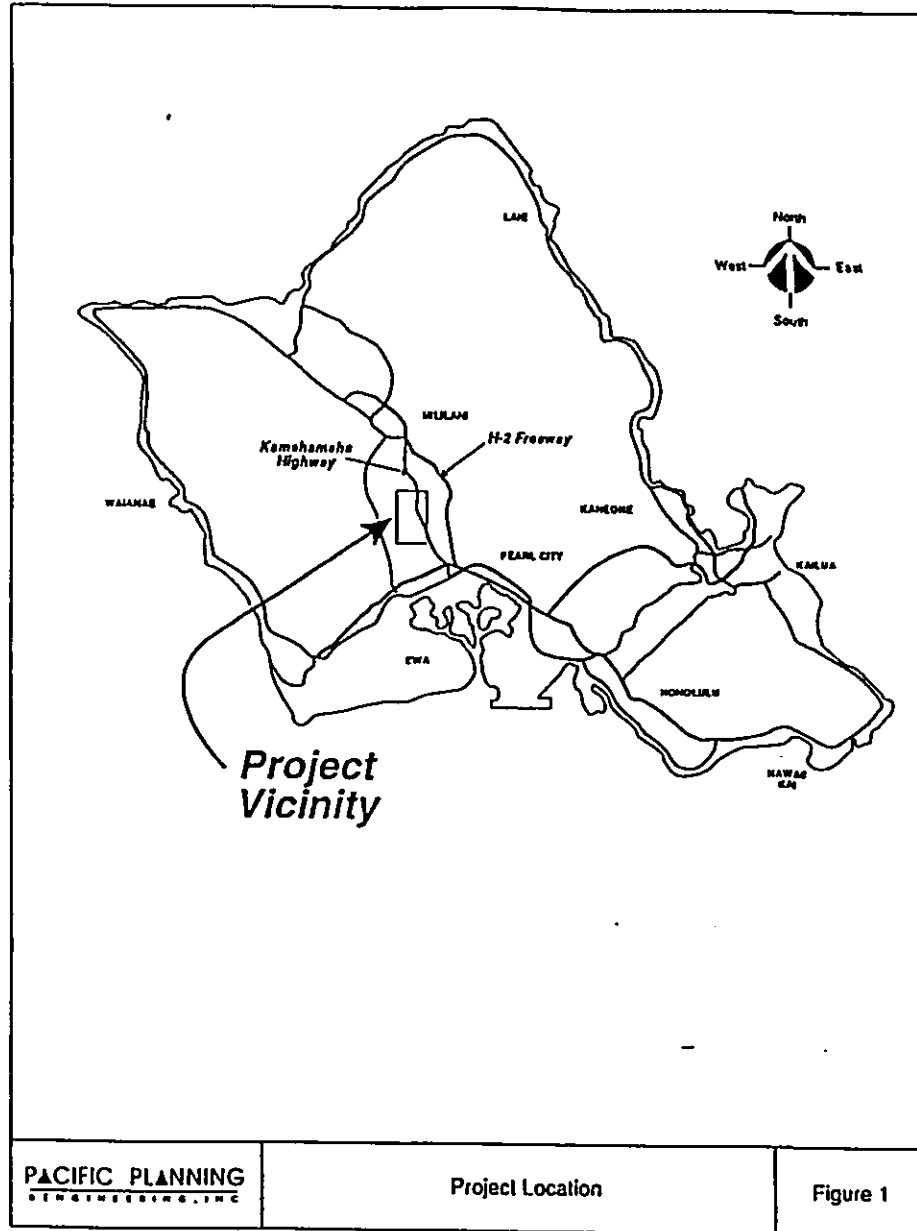
PROJECT DESCRIPTION

The City and County of Honolulu is proposing a 270 acre regional recreational park in Waipio, Oahu, Hawaii. The proposed project is located along Kamehameha Highway across from the Waipio subdivision and is identified by Tax Map Keys: 1-9-4-05:74. Figure 1 shows the project location.

The proposed Central Oahu Regional Park is anticipated to be completed by the year 2005 and includes the following facilities:

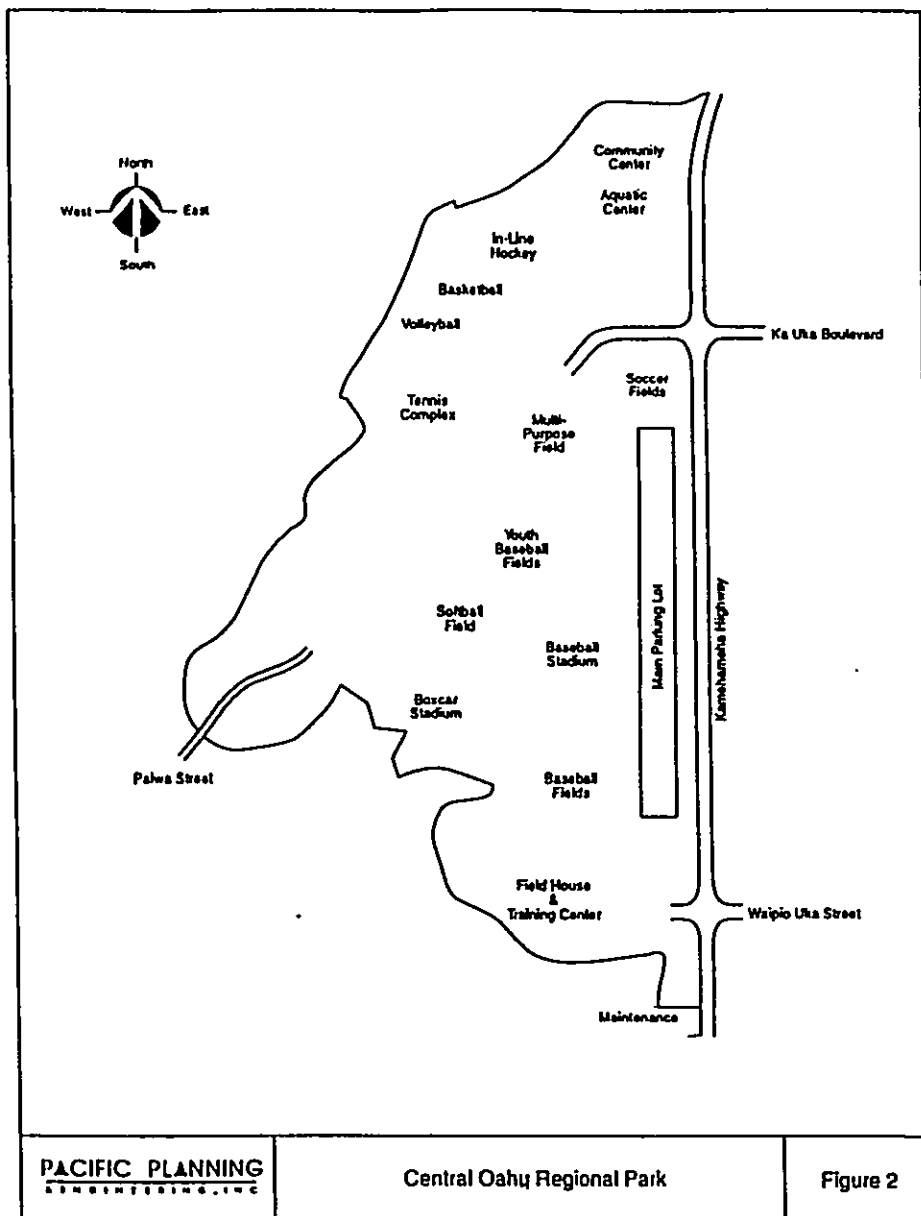
- Professional Baseball Complex
- Tennis Complex
- Aquatic Center
- Four (4) Youth Baseball Fields
- Four (4) Softball Fields
- Two (2) Soccer Fields
- Eight (8) Basketball Courts
- In-Line Hockey Facility
- Skateboard Park
- Boxcar Stadium and Track
- Community Center
- Passive park
- A Multi-Purpose Fields
- Five (5) Sand Volleyball

The Professional Baseball complex includes a 4,000 seat baseball stadium and 6 baseball fields with 100 seat bleachers for each field. The Tennis complex consists of a stadium court, four show courts with approximately 500 seats, four clay or fast dry softcourts and sixteen standard courts. The Aquatic center accommodates the full range of swimming needs from training and competitive events to individual recreational use.



Access to the project will be via extensions of Ka Uka Boulevard, Waipio Uka Street and Palwa Street. An internal road connecting Palwa Street with Waipio Uka Street will be provided to allow vehicles to enter/exit from both Kamehameha Highway and Palwa Street. This internal road is intended for park users and would be gated except for special events.

Approximately 2,400 parking spaces located at various locations throughout the site. About 1,250 parking stalls will be located adjacent to Kamehameha Highway and accessed via a frontage road connecting to Waipio Uka Street and an extension of Ka Uka Boulevard. Figure 2 shows the proposed project site plan.



EXISTING CONDITIONS

An inventory of existing conditions was conducted to establish current traffic conditions in the area and to provide a basis for estimating the potential traffic impact of the proposed project. The review included researching existing land uses in the area, roadway facilities and traffic conditions.

Land Uses

Currently, the existing project site is owned by Castle and Cooke and used for agricultural purposes. The present zoning is AG-1, restricted agricultural.

The land uses near the project include residential, commercial and light-industrial areas. The Waikēle residential community and Waikēle Shopping Center are located south of the project. The Gentry Business Park, Gentry Waipio Center and Waipio subdivision is located to the east across of Kamehameha Highway. The communities of Mililani and Wahiawa are located north of the project.

Roadway Facilities

Kamehameha Highway, in the vicinity of the project, was under construction to widen the northbound lane from Waipio Uka Street to approximately 700 feet north of Ka Uka Boulevard. Traffic signals and left-turn bays are provided at major intersections. Deceleration and acceleration lanes are provided at Waipio Uka Street, Ka Uka Boulevard, Lumilaina Street, Lumilauau Street and Waipahu Street. The posted speed limit is 45 miles per hour (mph) in the vicinity of the project except south of Waipio Uka Street where it is reduced to 35 mph.

Ka Uka Boulevard is a two-way four lane divided road connecting the Waipio Interchange to Kamehameha Highway. The posted speed limit is 25 mph. There are currently two signalized intersections along this road.

Waipio Uka Street is a two-way four lane divided roadway which has a circuitous alignment serving the Waipio residential areas and allows access/egress to Kamehameha Highway and Ka Uka Boulevard. The posted speed limit is 25 mph.

Paiwa Street in the vicinity of the project is a four lane divided roadway which serves the Waipahu and Waialeale areas. It has a generally north-south alignment and is currently terminated at the proposed project entrance to the north and at Farrington Highway to the south. Near the project, curb side parking is restricted at all times. The posted speed limit is 25 mph.

Lumiala Street is a two-way four lane divided road which connects Kamehameha Highway and Paiwa Street. Curb side parking is restricted at all times. The posted speed limit is 25 mph. Lumiala Street also serves the Waialeale Shopping Center.

Ukee Street is a two-way two lane local street which connects Ka Uka Boulevard with Waipio Uka Street. On-street parking is allowed on both sides of the street except near its intersections with Ka Uka Boulevard with Waipio Uka Street. The posted speed limit is 25 mph.

Lumiauau Street is a two-way two lane local street which serves both the Waialeale and Crestview areas. Street side parking is allowed on both sides of the street except near its intersections with Kamehameha Highway. The posted speed limit is 25 mph.

Waipahu Street is a two-way two lane road which connects Kunia Road with Kamehameha Highway. Within the vicinity of the project, on-street side parking is not allowed. The posted speed limit is 25 mph.

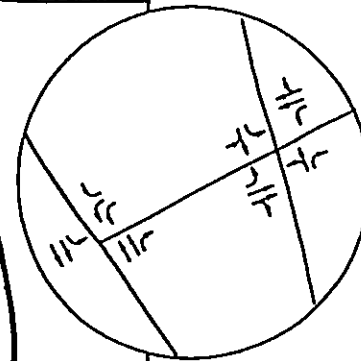
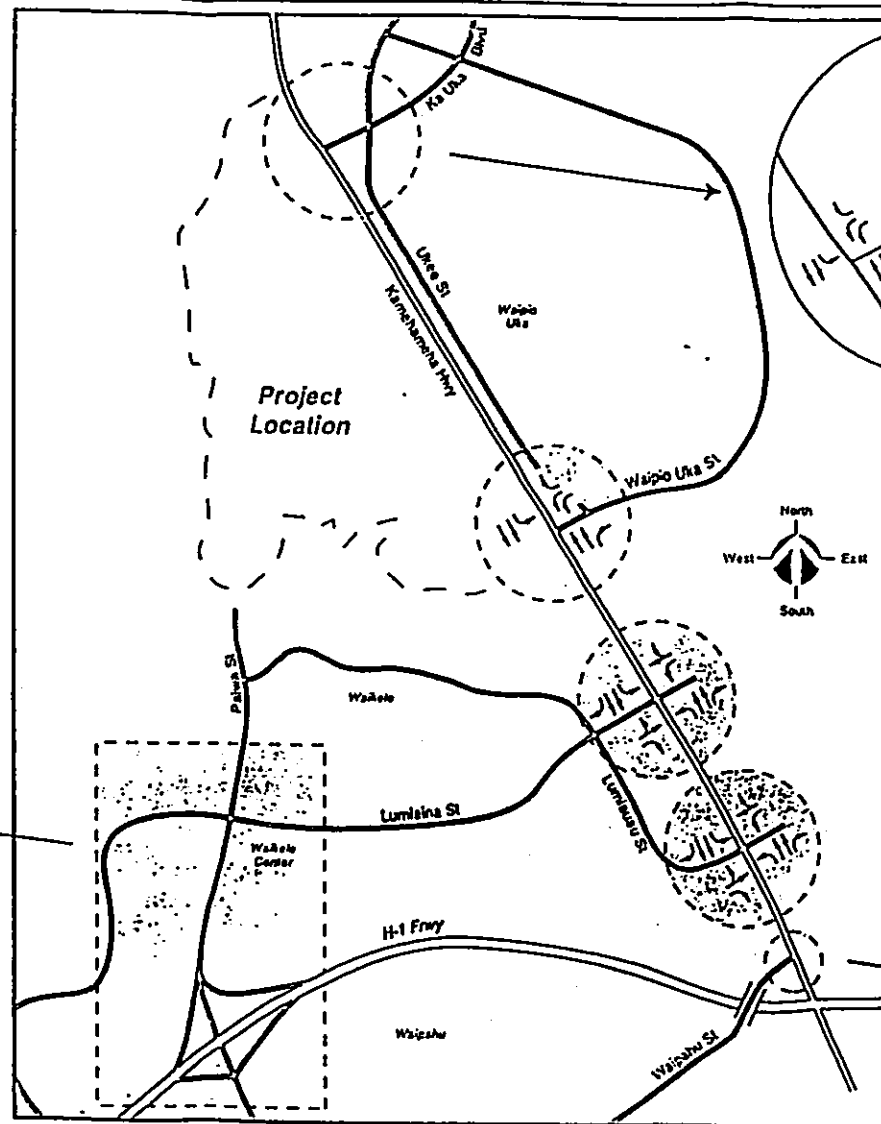
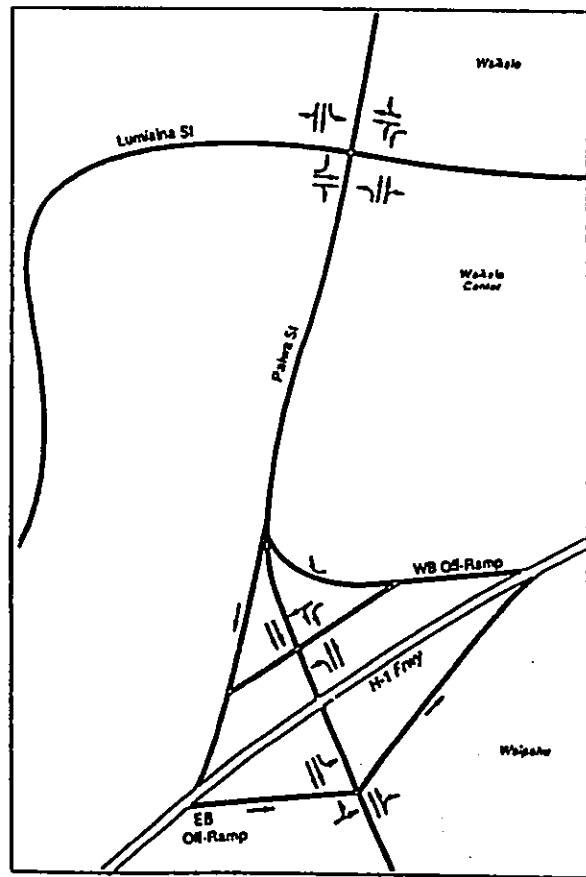
Study Intersections

The roadway network is shown on Figure 3. Figures 4 through 12 show each of the individual study intersections.

Traffic Conditions

The State Department of Transportation 24-hour count data indicate that the weekday peak traffic periods in the vicinity occur from 6:00 to 8:00 a.m. in the morning and 4:00 to 6:00 p.m. in the afternoon. Manual traffic counts were taken at the study intersections during the above peak hours and also on a weekend during the mid-day. This data was used as the baseline condition upon which estimated future traffic volumes were added. Counts were taken at the following locations:

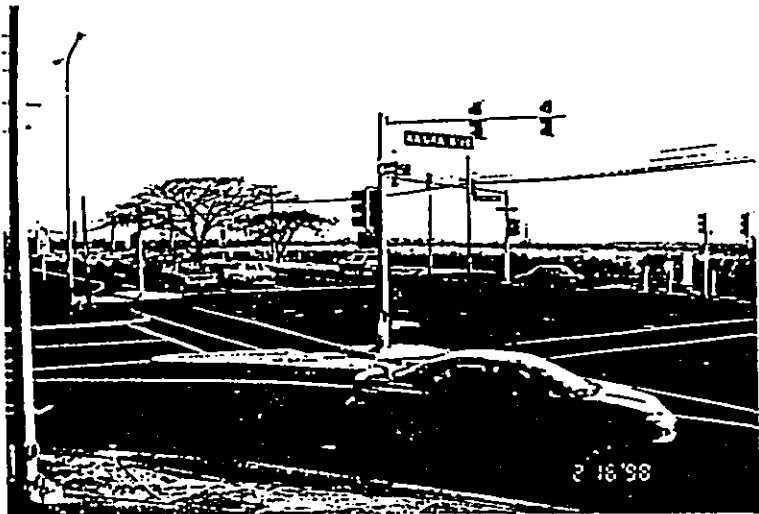
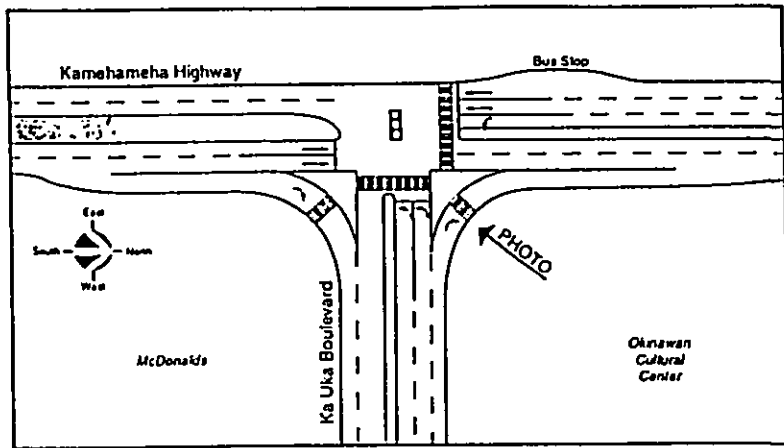
- Ka Uka Boulevard with Kamehameha Highway.
- Ka Uka Boulevard with Ukee Street.
- Waipio Uka Street with Kamehameha Highway.
- Lumiala Street with Kamehameha Highway.
- Lumiauau Street with Kamehameha Highway.
- Waipahu Street with Kamehameha Highway.
- Lumiala Street with Paiwa Street.
- Paiwa Street with H-1 Eastbound offramp and
- Paiwa Street with H-1 Westbound offramp.



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Study Intersections with Existing Laneages (as of May 1998)

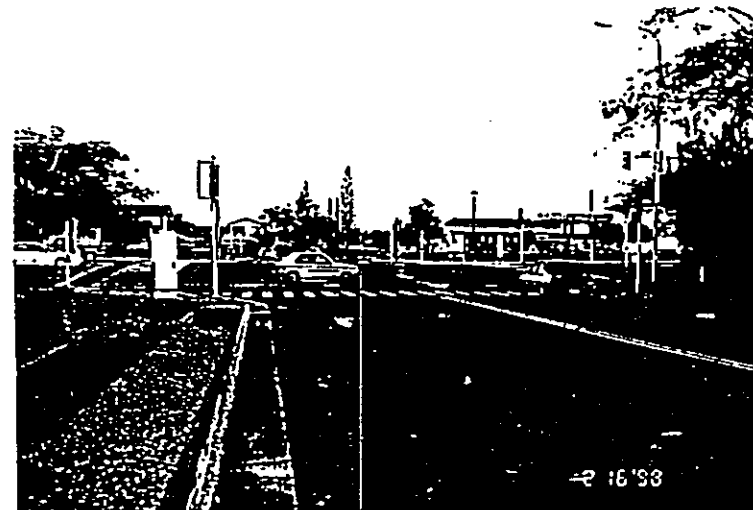
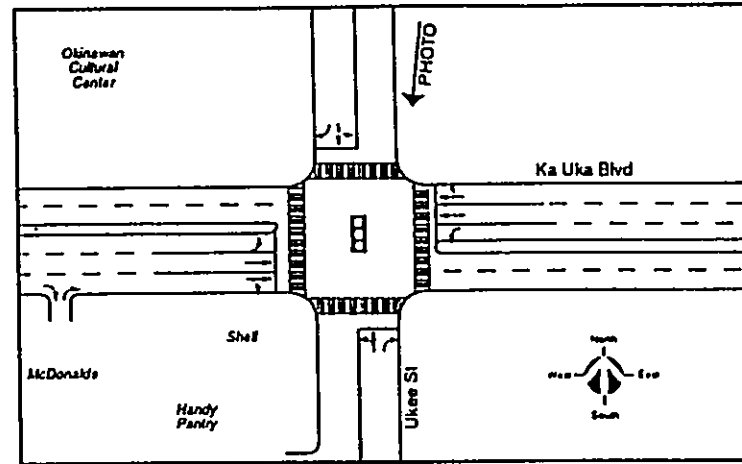
Figure 3



PACIFIC PLANNING
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Kamehameha Highway with Ka Uka Boulevard
Existing Laneage (Feb. 1998)

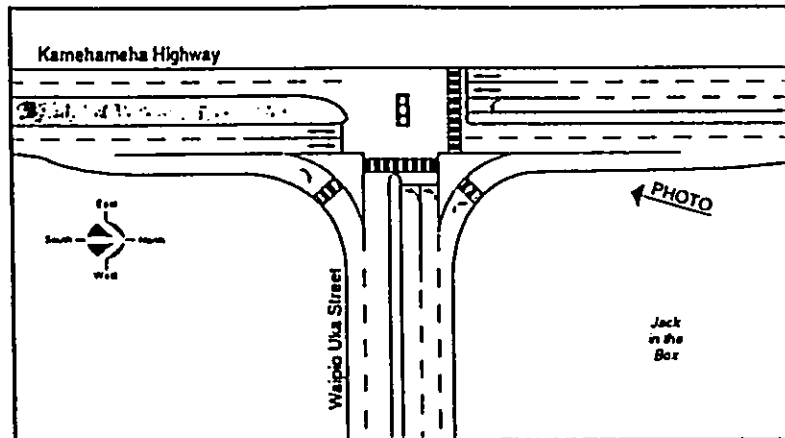
Figure 4



PACIFIC PLANNING
ENGINEERING, INC.

Ka Uka Boulevard with Ukee Street
Existing Laneage (Feb. 1998)

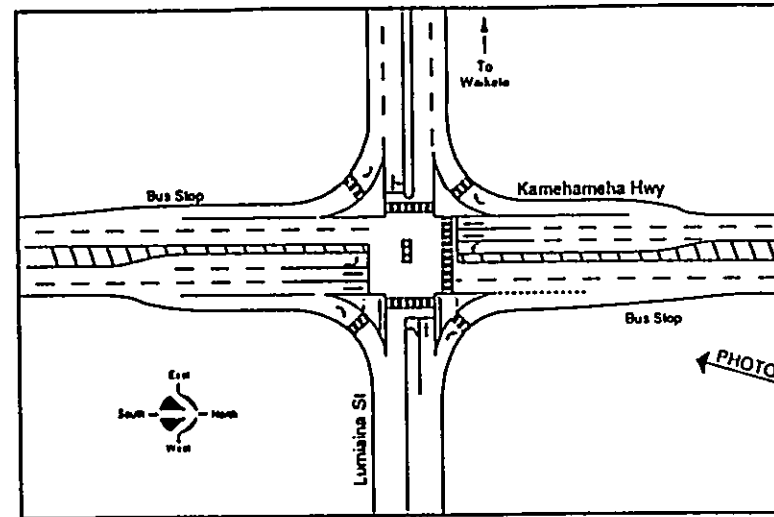
Figure 5



PACIFIC PLANNING
ENGINEERING, INC.

Kamehameha Highway with Waipio Uka Street
Existing Laneage (Feb. 1998)

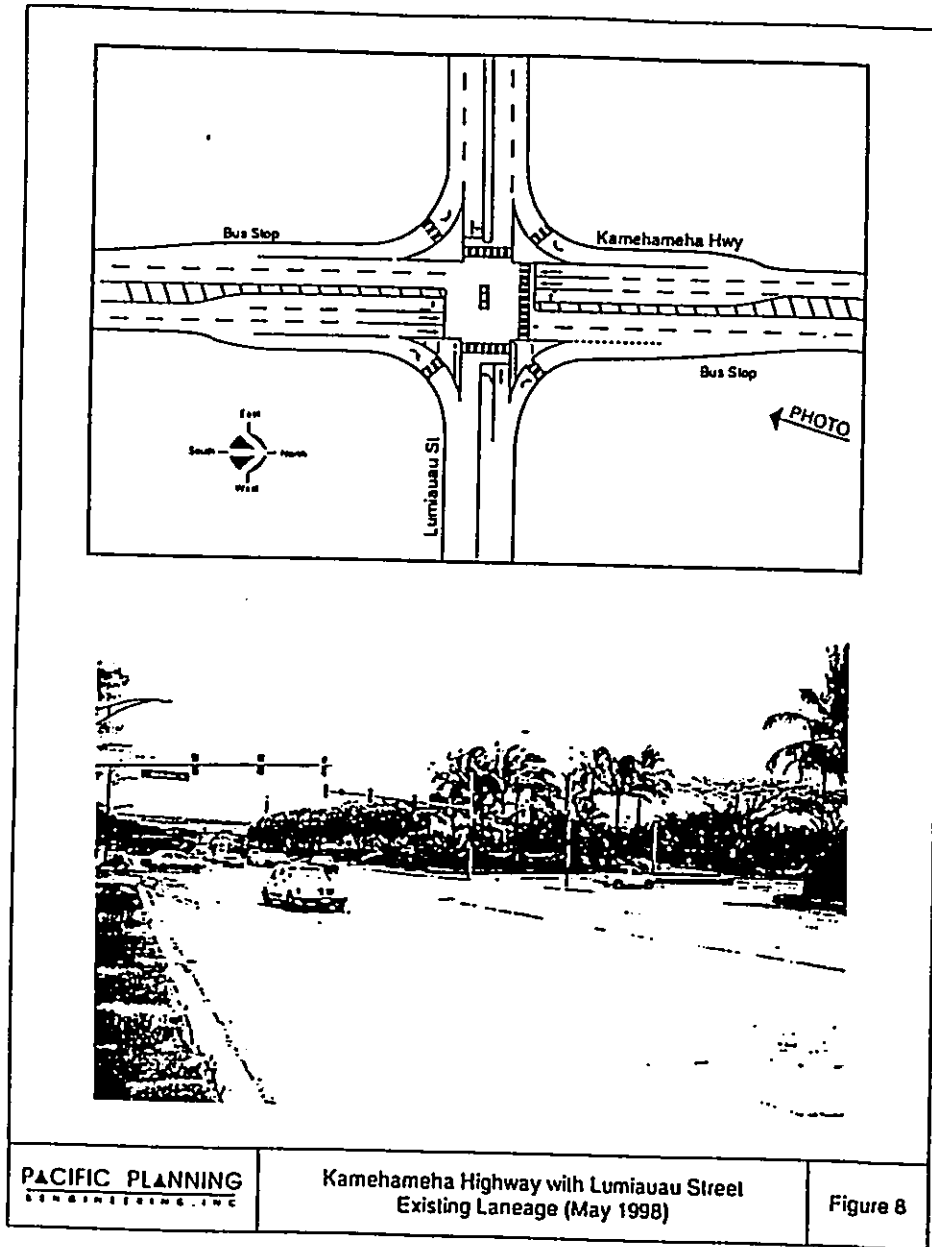
Figure 6



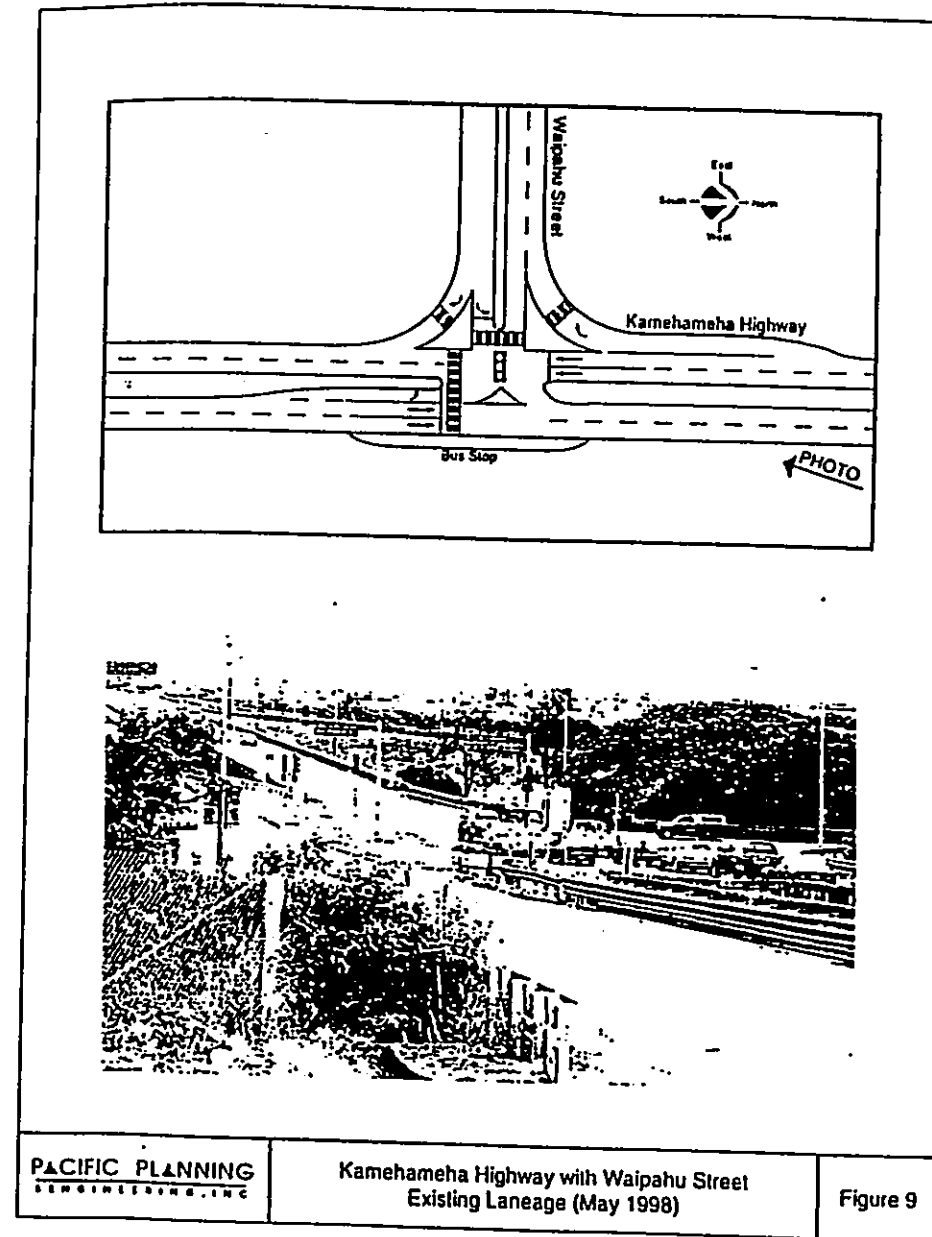
PACIFIC PLANNING
ENGINEERING, INC.

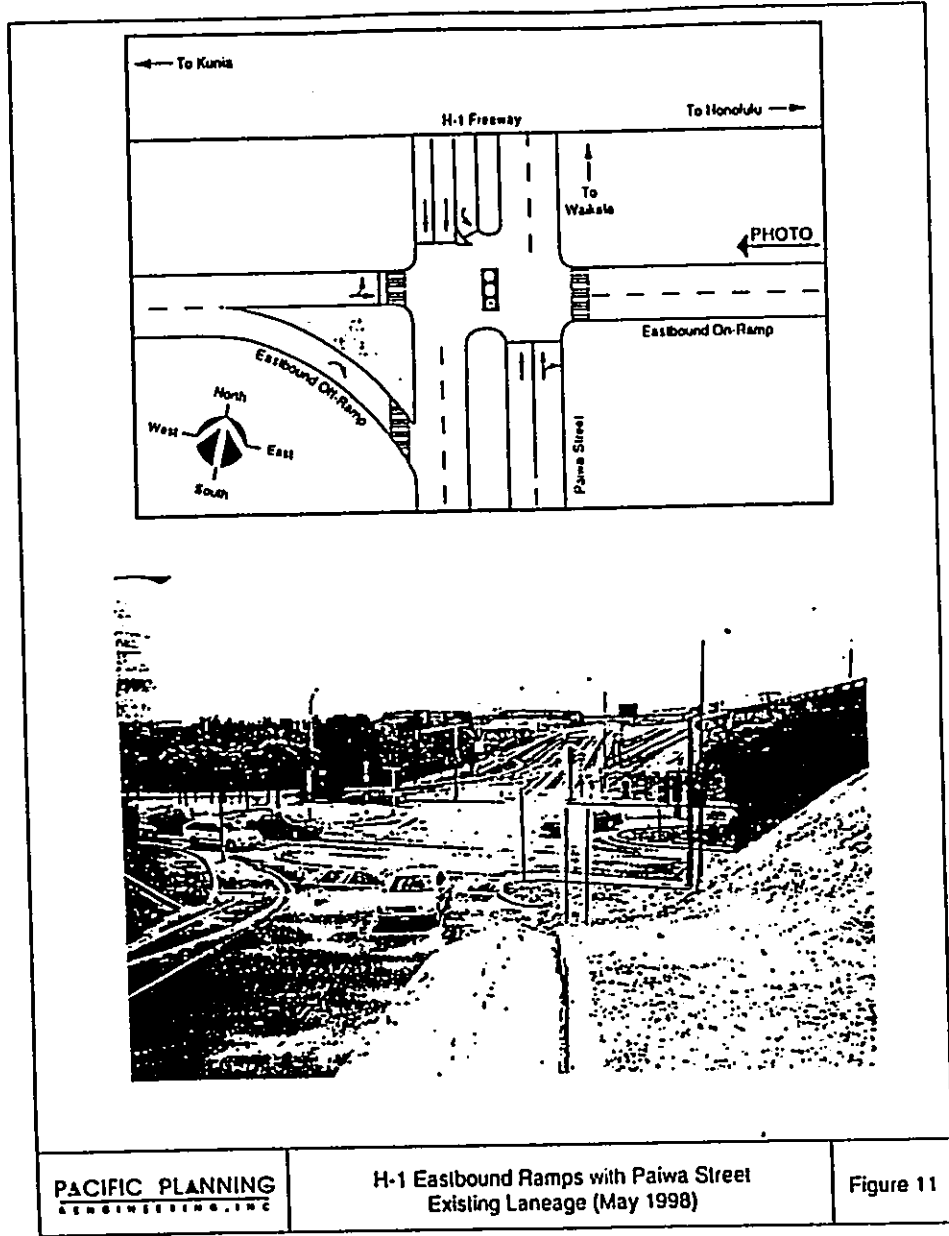
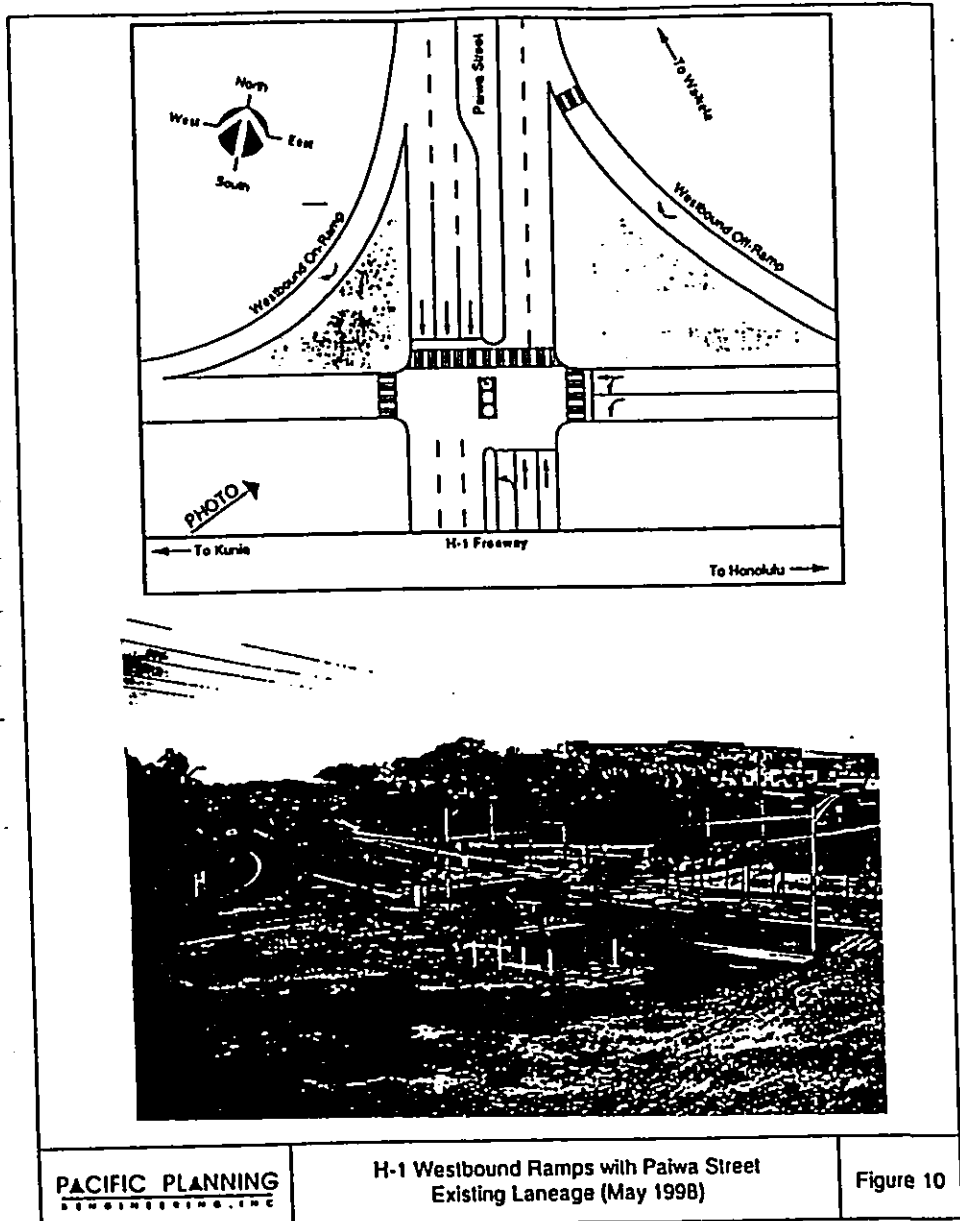
Kamehameha Highway with Lumiaina Street
Existing Laneage (May 1998)

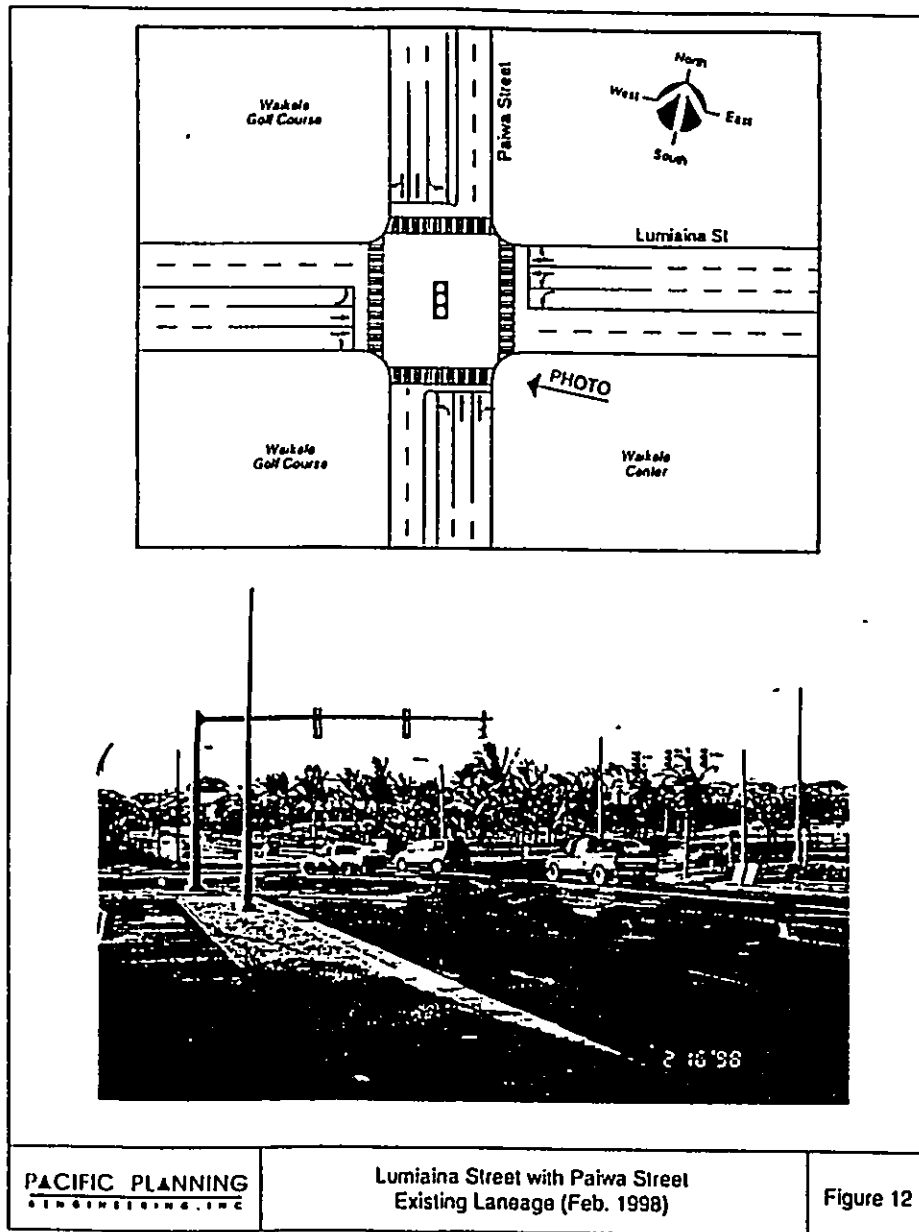
Figure 7



K. S. P. 10/1/98



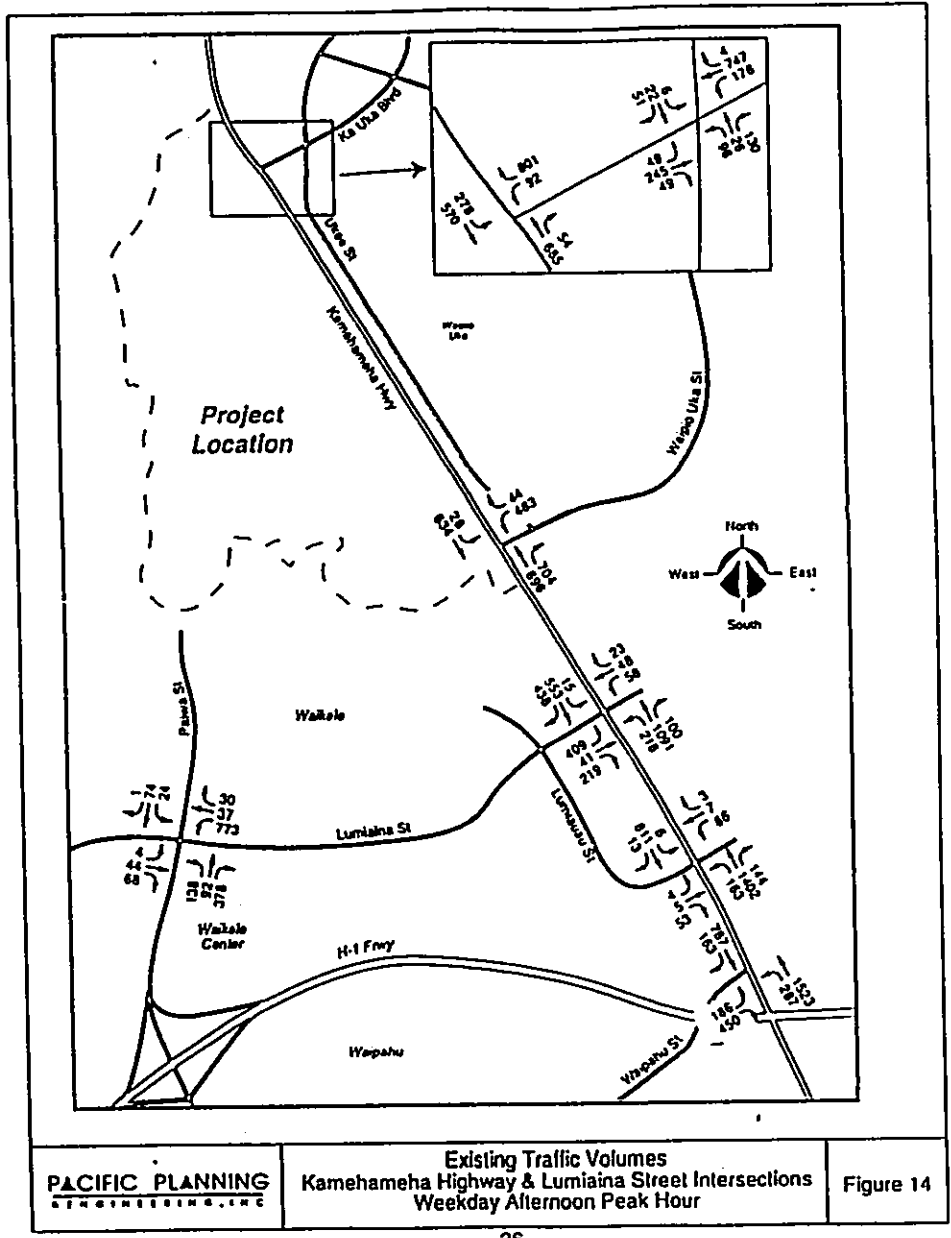
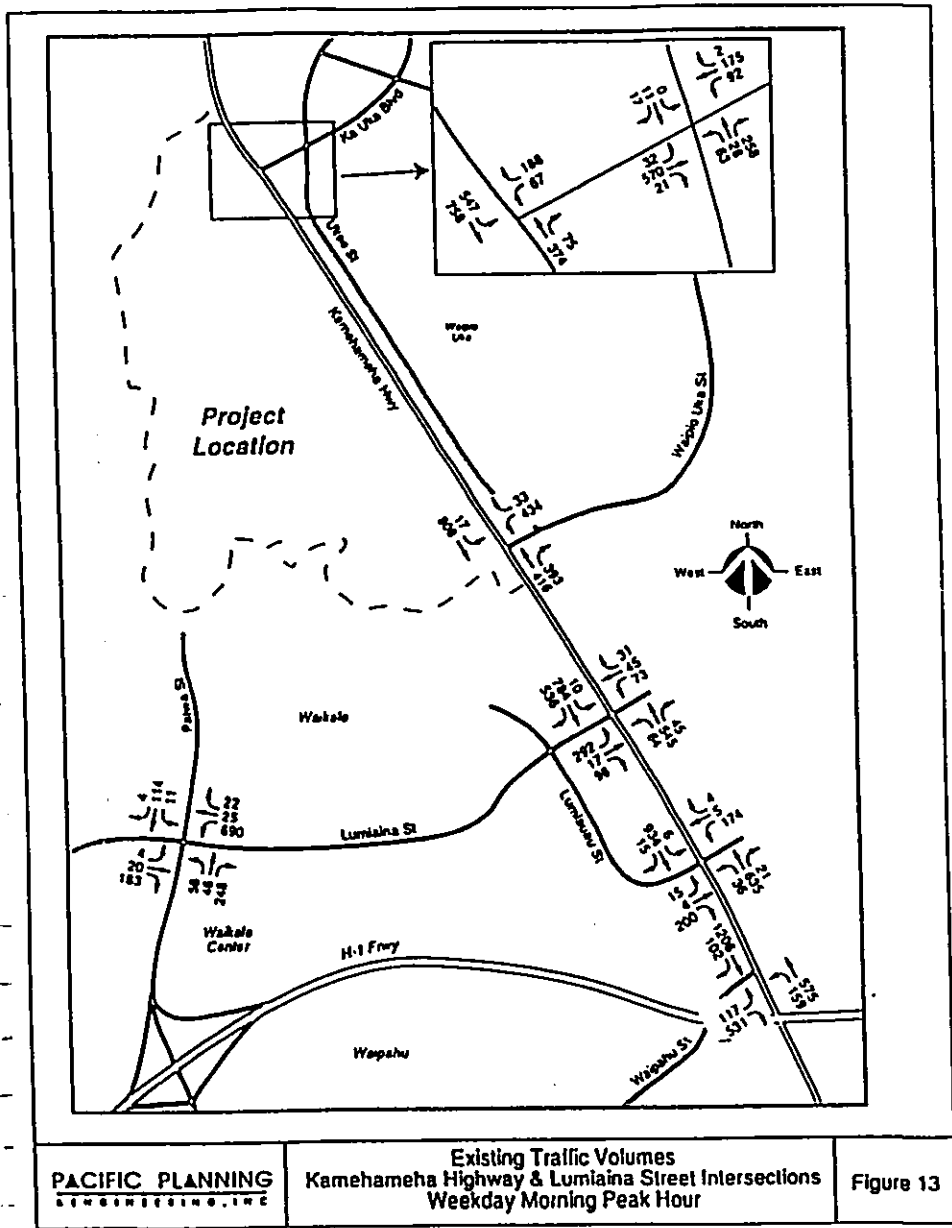


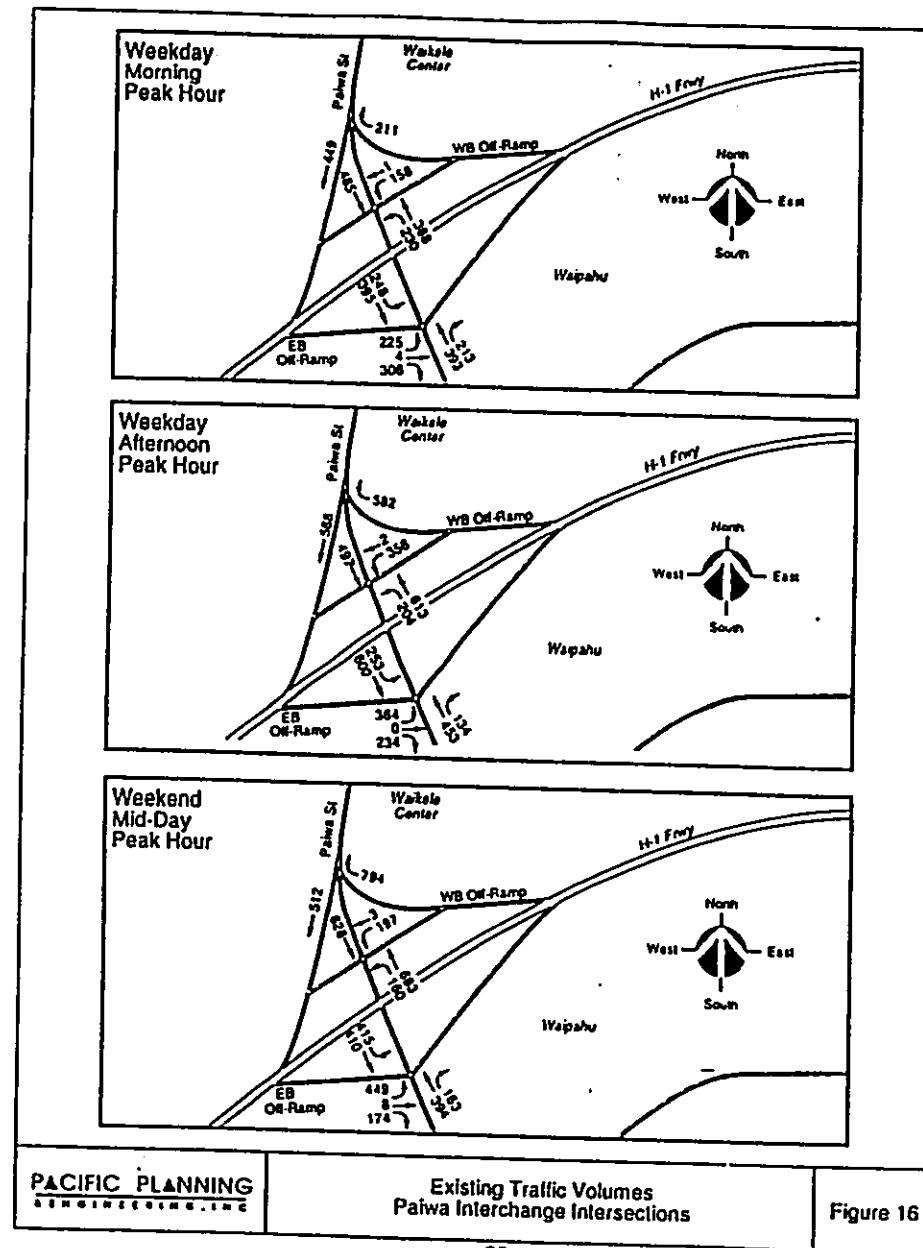
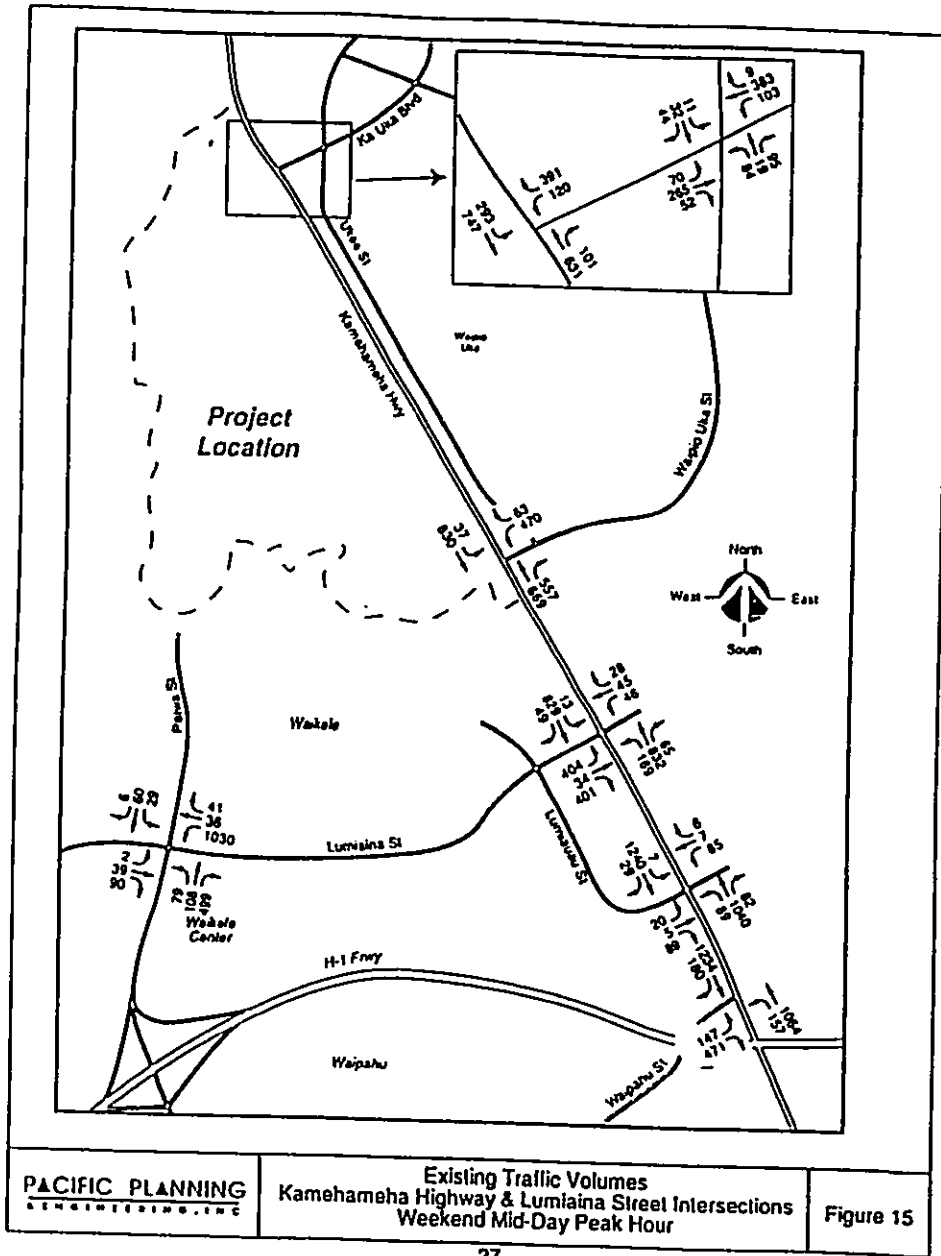


Manual counts consisted of passenger cars, trucks and buses by turning movements and approaches. During the study periods, the weather was clear, and the roadway pavement was dry. Figures 13 through 16 show the present traffic volumes at the study intersections. The traffic count data is tabulated in Appendix A.

The following observations were made at the time of the survey:

- At the intersections of Kamehameha Highway with Ka Uka Boulevard and Kamehameha Highway with Walpio Uka Street, traffic flowed smoothly along Kamehameha Highway during the study peak hours.
- At the intersection of Paiwa Street with Lumina Street, traffic flowed smoothly during the study peak hours. There were significant traffic volumes entering and exiting the Waialeale Center.
- At the intersection of Kamehameha Highway with Lumina Street, there were significant traffic volumes turning left from Lumina Street northbound onto Kamehameha Highway. Much of this volume appeared to have originated from Waialeale Center.
- At the intersection of Paiwa Street with H-1 Westbound offramp, traffic flowed smoothly during the study peak hours. The westbound right-turn movement had a maximum queue length of 21 vehicles during the Saturday mid-day peak period and did not extend onto the freeway.
- At the intersection of Paiwa Street with H-1 Eastbound offramp, traffic flowed smoothly during the study peak hours. The eastbound left-turn movement had a maximum queue length of 16 vehicles during the Saturday mid-day peak period and did not extend onto the freeway.





FUTURE CONDITIONS

A survey was conducted for approved planned developments in the immediate area for inclusion in the total future traffic conditions at the study intersections. Research was also done on future roadway conditions.

Land Uses

The following land uses are expected to be completed by the study year of 2005.

- Waikēle Elementary School
- Waikēle Development (Tropics and Classic single-family residential units and Village on the Green townhouses)
- Zippy's Commissary - Main Kitchen, Catering & Baking Center

Approximately 874 acres of land located east of the H-2 freeway near the Waipio Interchange, commonly known as Waiawa-Gentry, was recently rezoned from agricultural use to a mix of land uses ranging from residential to commercial and light industrial uses. Details of the proposed uses in this development are not yet available. The contribution of traffic of this development and other future projects whose characteristics and timing have not been clearly defined is taken into account by assuming an average annual growth rate in future through-traffic (see page 31).

Roadway Facilities

In December 1997, Kamehameha Highway was in the last stage of construction improvements. The Kamehameha Highway widening project involved increasing the through lanes from 3 to 4 from Waipio Uka Street to Ka Uka Boulevard. Figure 4 showed the improved laneage configuration at its intersection with Ka Uka Boulevard.

PROJECTED TRAFFIC CONDITIONS

Future traffic was forecasted for the year 2005 without and with the proposed Central Oahu Regional Park.

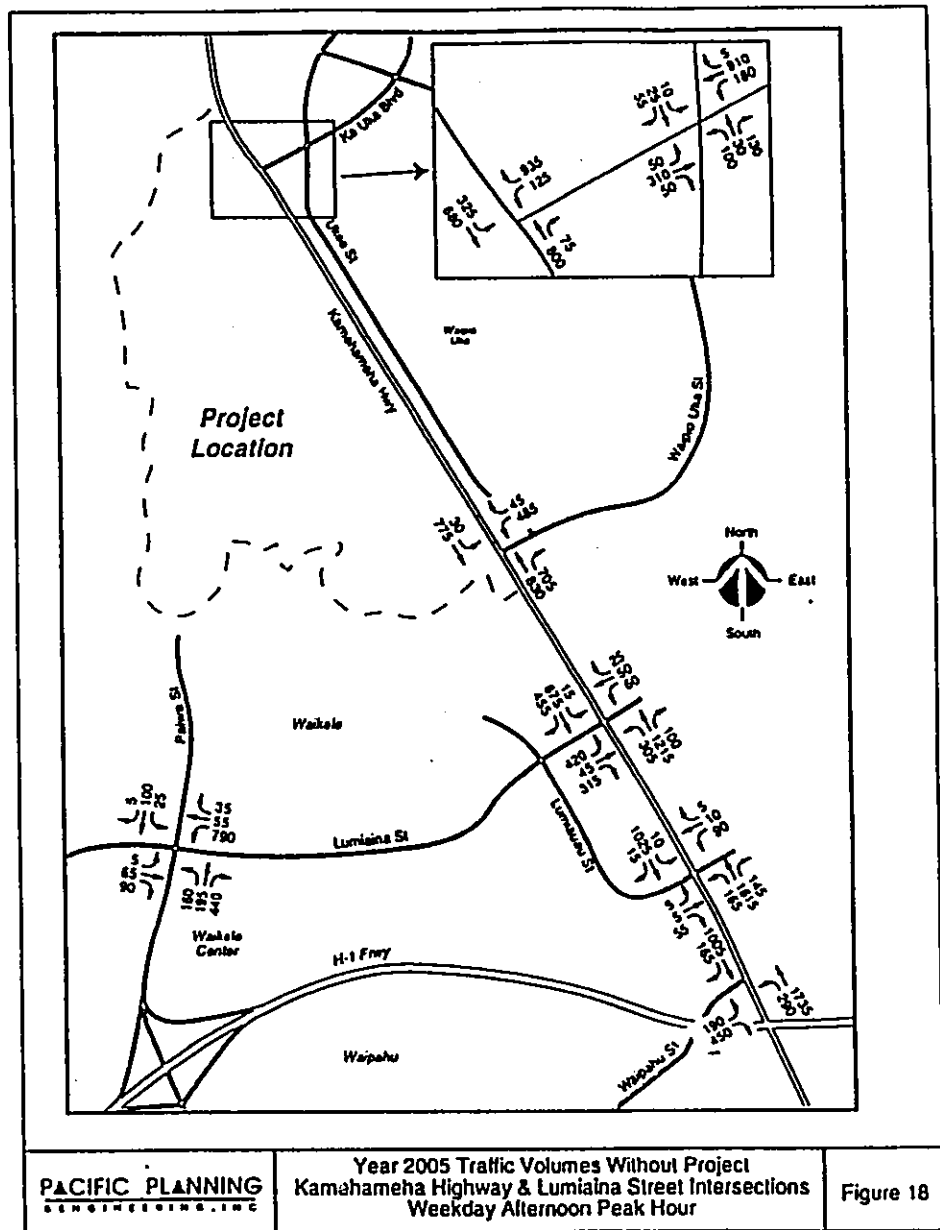
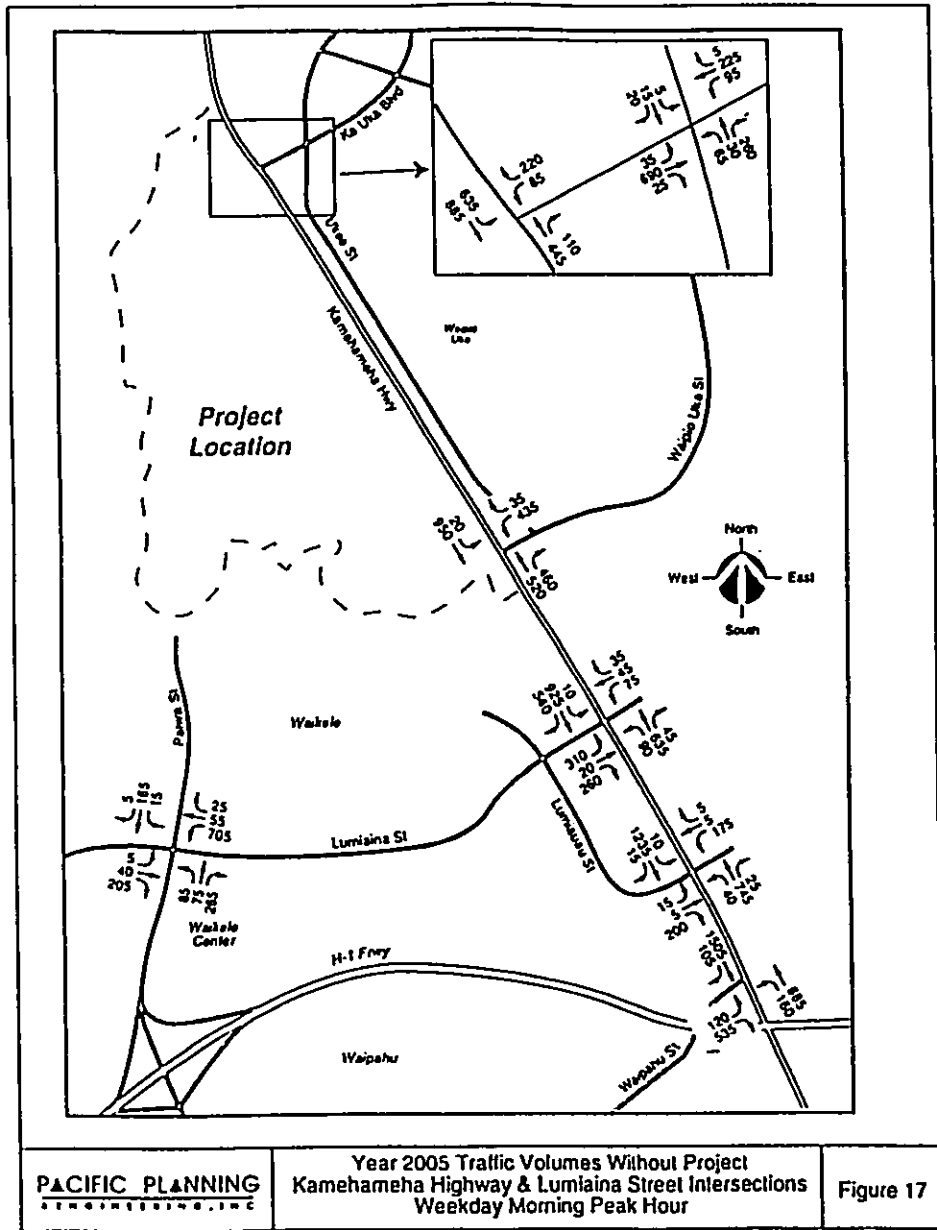
Future Traffic Without Project

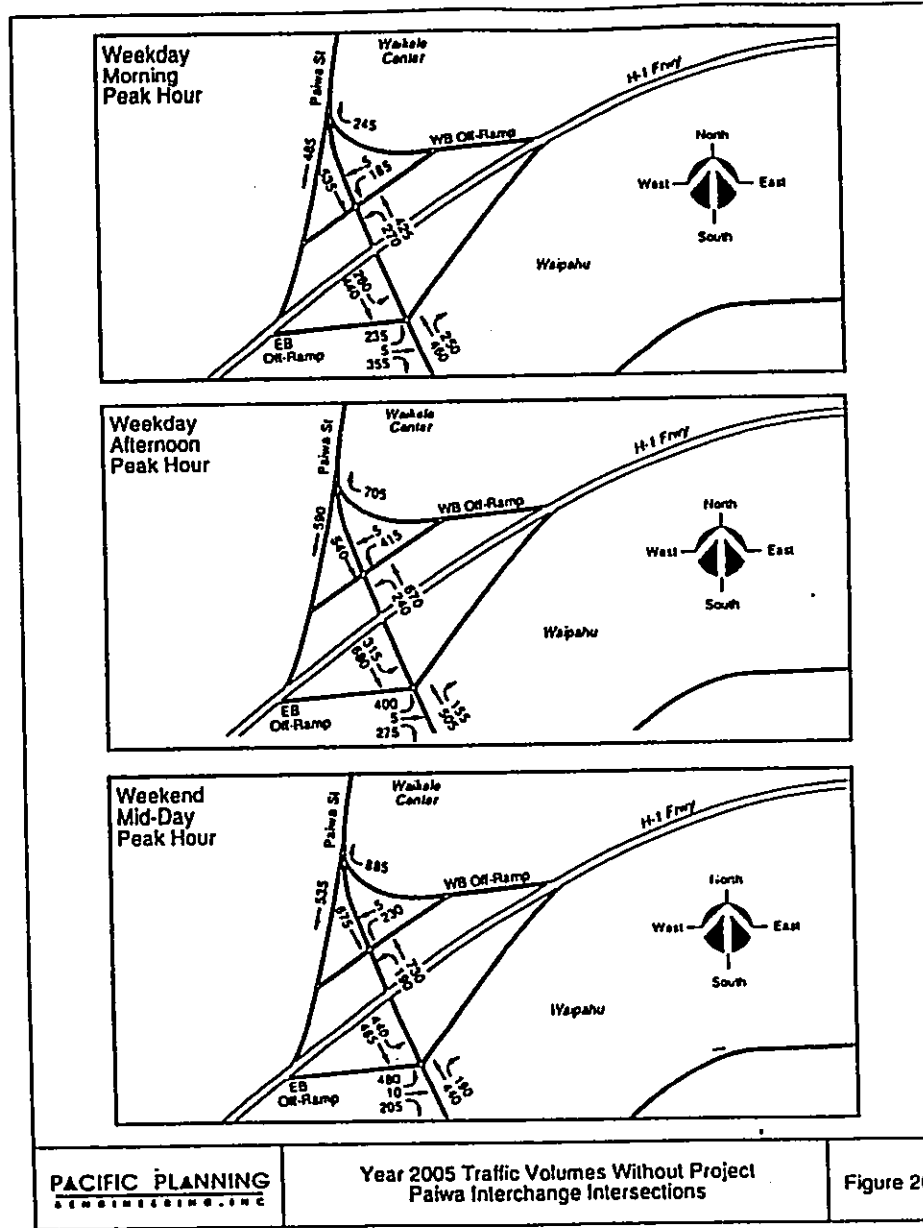
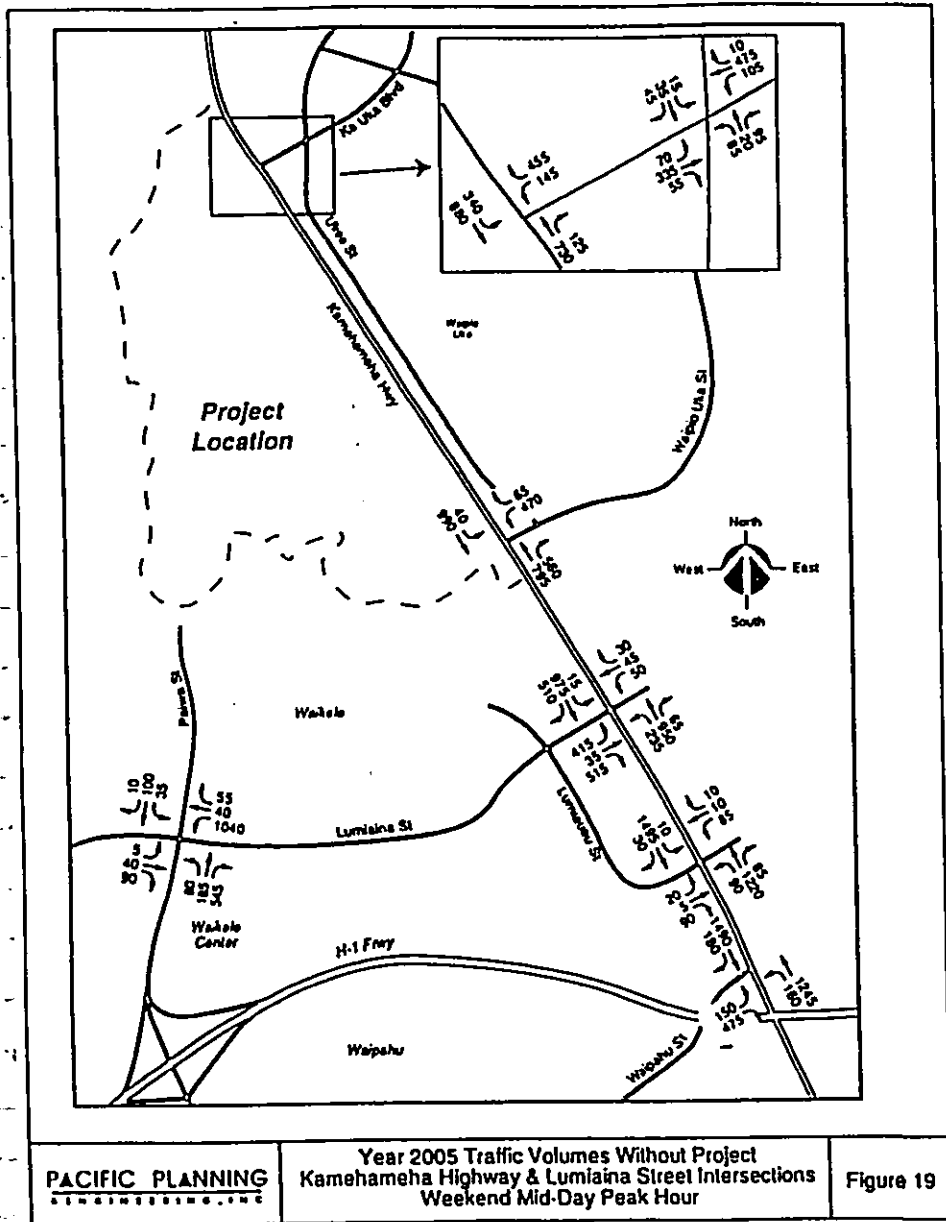
Future traffic without the Project was forecasted by evaluating and adding the following: (1) existing traffic volumes for the weekday morning, weekday afternoon and weekend mid-day peak periods, (2) the increase in through-traffic along Kamehameha Highway and Ka Uka Boulevard and (3) traffic generated by nearby approved proposed developments. The peak hour traffic volume forecasts without the project for the year 2005 are shown in Figures 17 through 20.

Through-Traffic Growth

Through-traffic is defined as traffic that travels without a specific origin or destination near the project site. The growth in through-traffic was estimated using historical data obtained from various HDOT traffic count stations at points along the study roadways as well as information from other studies including the Oahu Regional Transportation Plan¹. The growth rate was calculated at approximately 2% per year. Accordingly, the existing through traffic was increased by 16% (2% x 8 years) on Kamehameha Highway and Ka Uka Boulevard for the weekday morning, weekday afternoon and weekend mid-day peak periods. The growth rate is intended to account for future conditions such as other developments outside of the project study area and future projects which have not been clearly defined yet such as Waiawa-Gentry.

¹ 2020 Oahu Regional Transportation Plan, by Kaku Associates, Inc., November 1995.





Traffic From Other Developments

The three-step procedure of trip generation, trip distribution, and traffic assignment was used to forecast traffic from other developments.

The trip generation step estimates the number of trips that would be generated by the other developments in the area during the weekday morning and afternoon peak hours. Trip generation for the following projects was based on rates from the ITE Trip Generation Report².

- Waikēle Elementary School
- Waikēle Development (Tropics and Classic single-family residential units and Village on the Green townhouses)
- Zippy's Commissary - Main Kitchen, Catering & Baking Center

The trip distribution step estimates the distribution of vehicle trips to their predicted destinations and origins. Trips were distributed based on projections of population and employment for the year 2005.

Future traffic from these developments was assigned to a specific route for each origin and destination based on available traffic studies and estimated shortest distance or travel time.

Future Traffic With Project

Future traffic with the project was obtained by adding traffic generated by the project to the forecasted traffic without the project. The peak hour traffic volume forecasts with the project for the year 2005 are shown in Figures 21 through 24.

² Trip Generation Report, by the Institute of Transportation Engineers, Sixth Edition, 1997.

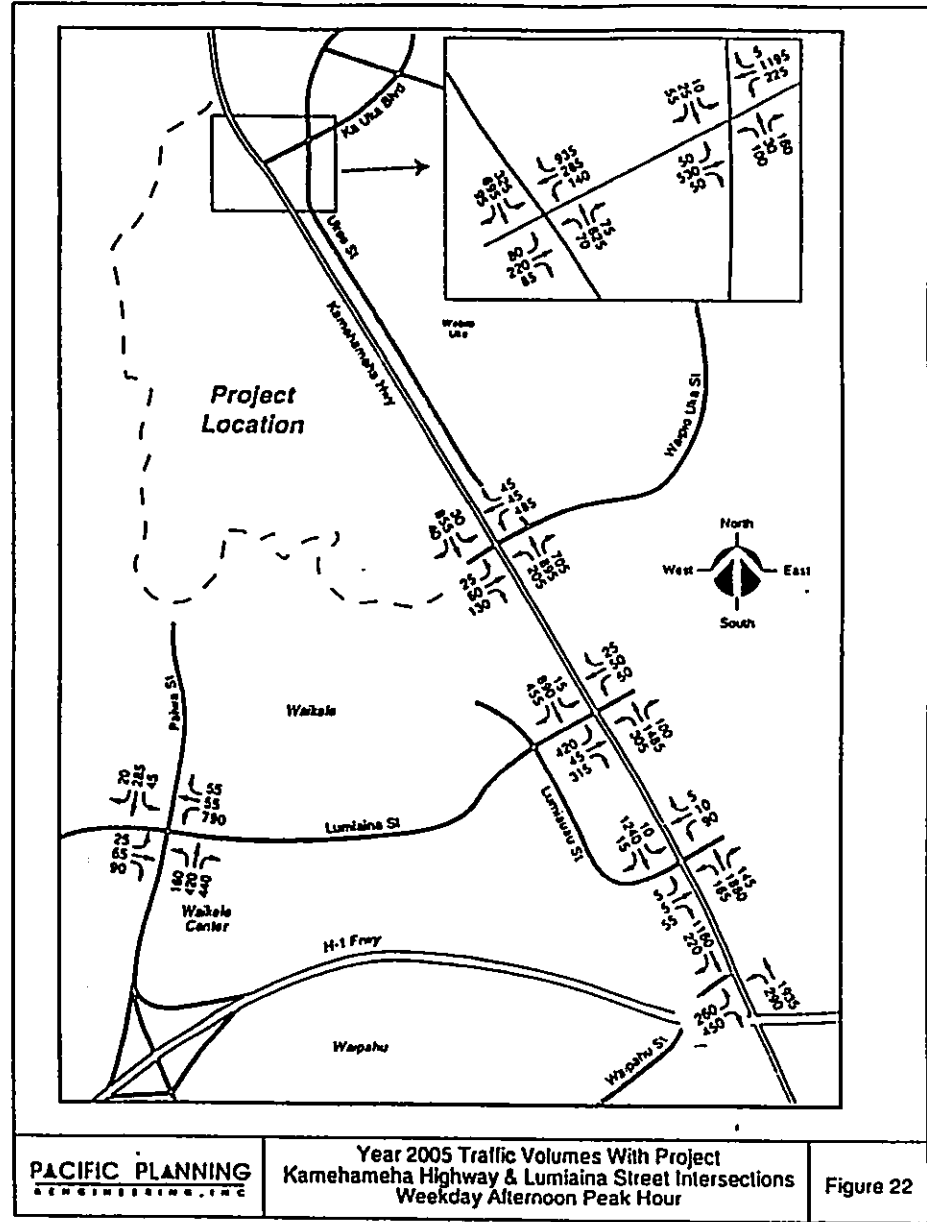
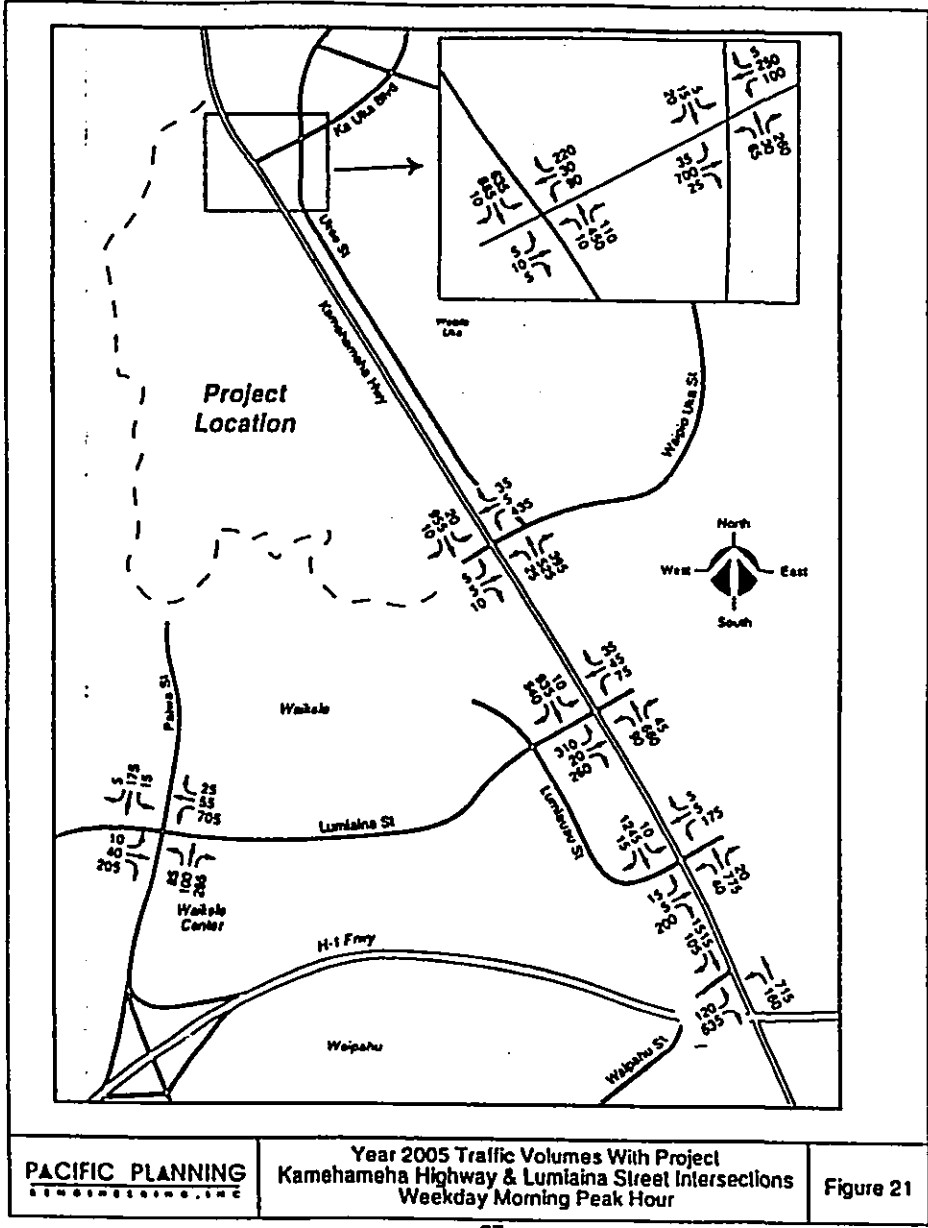
The standard three step procedure of trip generation, trip distribution, and traffic assignment was used to estimate peak hour traffic from the proposed project.

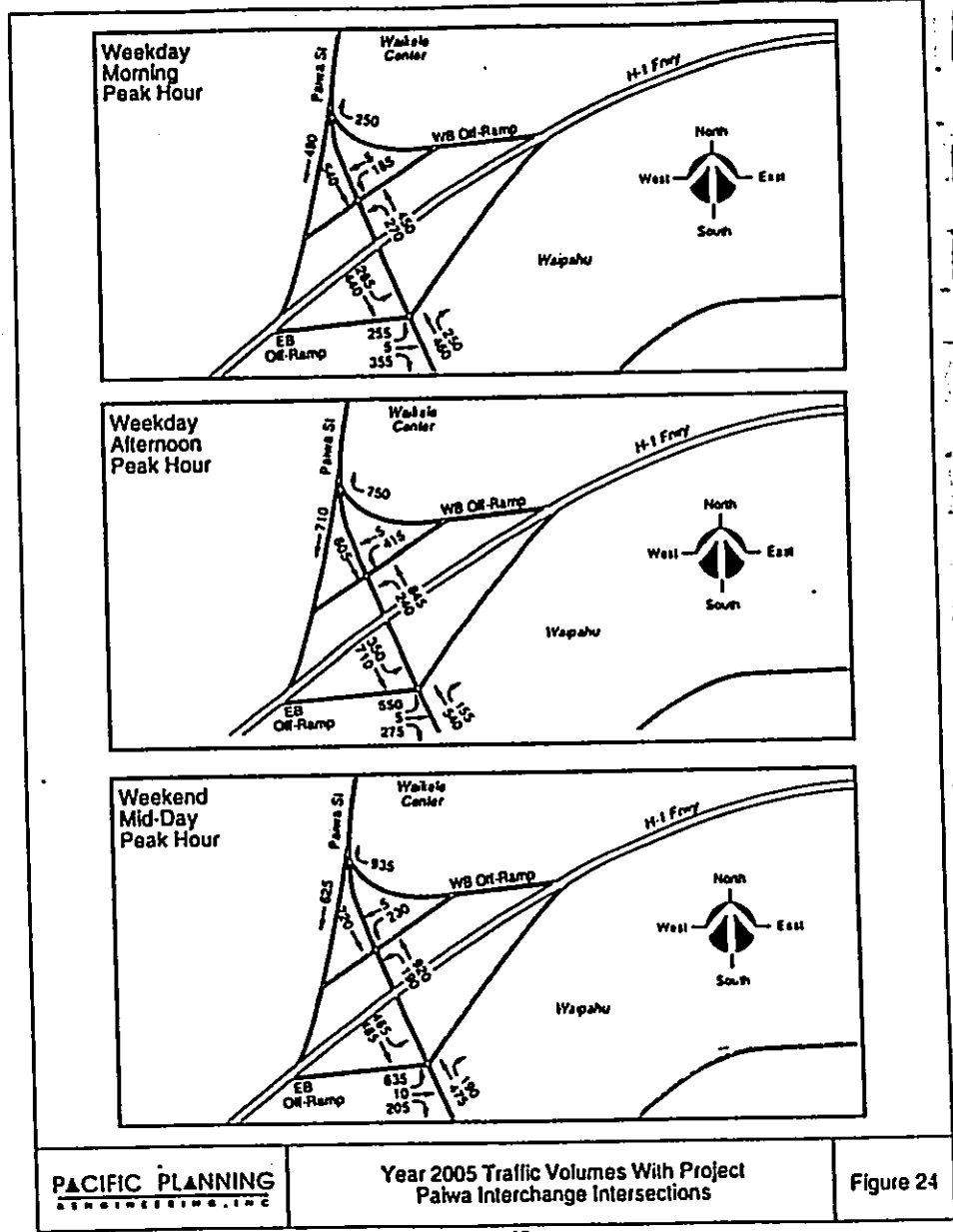
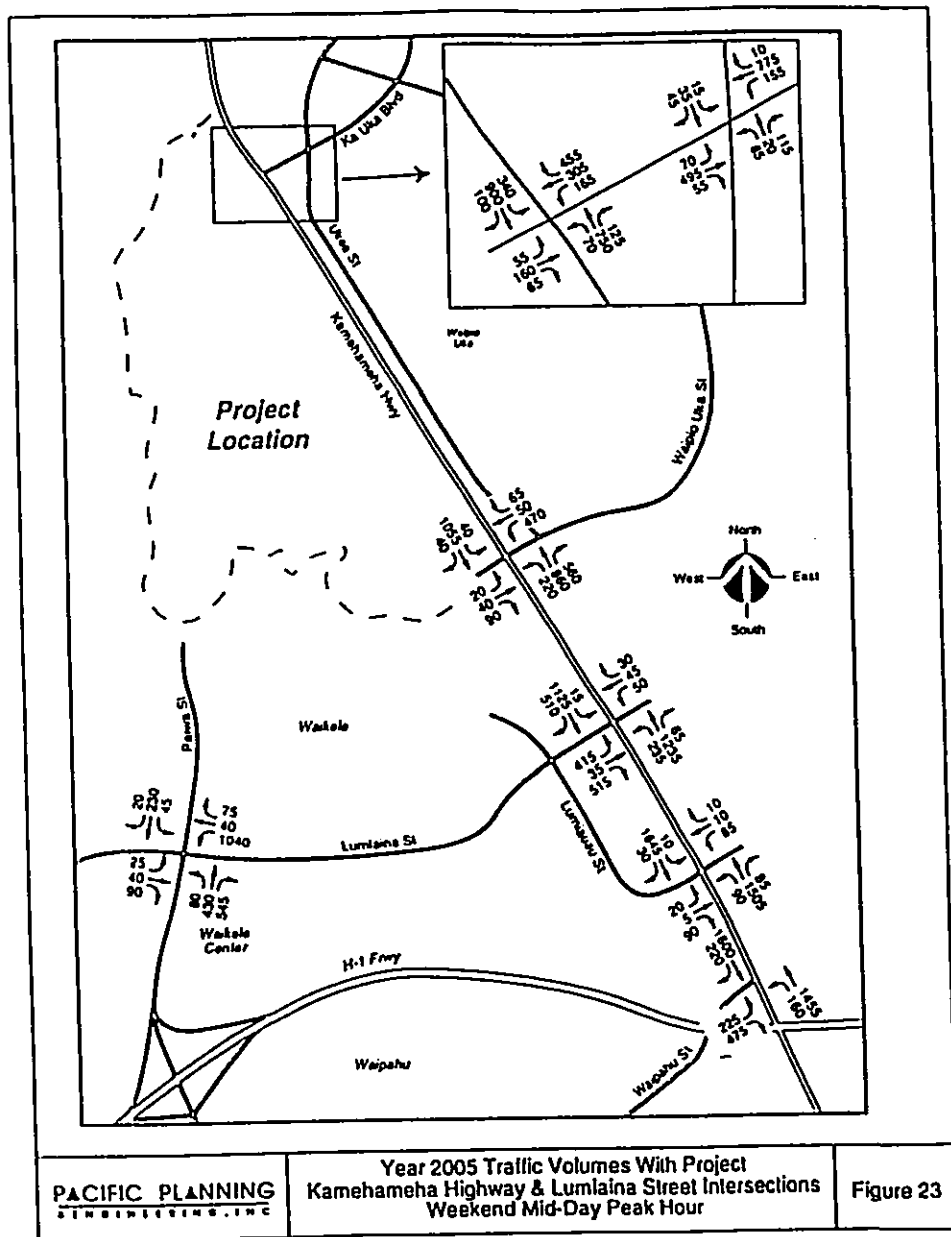
Trips generated by the Waialoa Sports Complex were estimated using the project land uses and trip rates from the ITE Trip Generation Report where applicable. Appendix B details how trips were derived for each land use. Table 1 shows the number of generated trips.

Table 1. Trip Generation for Central Oahu Regional Park

Land Use	Morning		Afternoon		Saturday	
	Enter	Exit	Enter	Exit	Enter	Exit
Baseball Complex	43	7	498	298	464	65
Tennis Complex	28	14	33	64	37	38
Community Center & Aquatic Center	38	20	28	50	27	28
Baseball Fields	0	0	173	85	173	85
Youth Baseball Fields	0	0	57	115	57	115
Softball Fields	0	0	115	57	115	57
Soccer Fields	0	0	18	37	18	37
In-Line Hockey Facility	0	0	40	82	40	82
Boxcar Stadium & Track	0	0	33	17	124	64
Total Trips	109	41	993	805	1,055	571

The trip distribution step estimates the distribution of vehicle trips to their predicted destinations and origins. Trips were distributed based on projections of population and employment on Oahu for the year 2005. The traffic assignment step assigns vehicle trips to specific routes on the roadway network that will take the driver from origin to destination. Traffic was assigned to the various roadways near the three project accesses.





TRAFFIC ANALYSIS

Analyses were conducted on the following study intersections to determine the relative impact of the proposed Central Oahu Regional Park on the roadway system and to determine improvements to mitigate the impact of the project, if necessary:

- Ka Uka Boulevard with Kamehameha Highway.
- Ka Uka Boulevard with Ukee Street.
- Waipio Uka Street with Kamehameha Highway.
- Lumialna Street with Kamehameha Highway.
- Lumiauau Street with Kamehameha Highway.
- Waipahu Street with Kamehameha Highway.
- Lumialna Street with Palwa Street.
- Palwa Street with H-1 Eastbound offramp and
- Palwa Street with H-1 Westbound offramp.

Analysis Methods

The study intersections were analyzed using analysis procedures outlined in the Highway Capacity Manual (HCM), Special Report 209, 1994. The methodology for operational analysis measures traffic operations using the "level-of-service" (LOS) rating, which ranges from A to F. Appendix C provides detailed definitions of the LOS used in this study.

Signalized Intersection Analysis

The signalized intersections were analyzed using the HCM's operational analysis. This analysis is based on average stopped delay per vehicle to measure traffic operating conditions. Traffic operations are measured using the Level-of-Service (LOS) rating. The LOS for traffic movements at a

signalized intersection is classified into six categories ranging from less than 5 seconds of average delay per vehicle (LOS A) to over 60 seconds of average delay per vehicle (LOS F).

Unsignalized Intersection Analysis

At the Palwa Interchange Eastbound and Westbound offramp, the right-turn movement onto Palwa Street essentially operates as an unsignalized intersection and was analyzed using operational analysis for unsignalized intersections.

The "level-of-service" (LOS) for unsignalized intersections is determined by total delay which is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the last-in-queue position. LOS for unsignalized intersections is classified into the six LOS categories ranging from less than 5 seconds of average total delay per vehicle (LOS A) to over 45 seconds of average total delay per vehicle (LOS F).

Analysis Results

The results of the analysis for each of the study intersections are shown in Figures 25 through 42 with highlights described below. The minimum recommended laneage at each intersection is shown on Figure 43.

Kamehameha Highway with Ka Uka Boulevard (Figures 25, 31 and 37)

Recommended Laneage - The westbound leg of Ka Uka Boulevard should consist of an exclusive left-turn lane, a through lane and an exclusive right-turn lane. The eastbound leg should consist of an exclusive left-turn lane, a through lane and a shared through and right-turn lanes. Along Kamehameha

Highway, a northbound exclusive left-turn lane and a southbound exclusive right-turn lane should be provided for entrance into the park.

- With the project and the recommended laneage, this intersection is expected to operate at an overall LOS D or better.

Ka Uka Boulevard with Ukee Street (Figures 25, 31 and 37)

Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

- With the project, this intersection is expected to operate at a LOS B or better.

Kamehameha Highway with Walpio Uka Street (Figures 26, 32 and 38)

Recommended Laneage - The westbound leg of Walpio Uka Street should consist of a shared through/right-turn lane and double left-turn lanes. The eastbound leg should consist of one through lane with separate left- and right-turn lanes. Along Kamehameha Highway, a northbound exclusive left-turn lane and a southbound exclusive right-turn lane should be provided.

- With the project and the recommended laneage, this intersection is expected to operate at an overall LOS D or better.

Kamehameha Highway with Lumilaina Street (Figures 27, 33 and 39)

Recommended Laneage - No laneage modifications are necessary at this intersection due to the proposed project.

- With the project, this intersection is expected to operate at an overall LOS D or better.

Kamehameha Highway with Lumilauau Street (Figures 28, 34 and 40)

Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

- With the project, this intersection is expected to operate at an overall LOS D or better.

Kamehameha Highway with Waipahu Street (Figures 28, 34 and 40)

Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

- With the project, this intersection is expected to operate at essentially the same overall level-of-service as without the project.

Paliwa Street with Lumilaina Street (Figures 29, 35 and 41)

Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

- With the project, this intersection is expected to operate at an overall LOS C or better.

Paliwa Street with H-1 Freeway Westbound Offramp (Figures 30, 36 and 42)

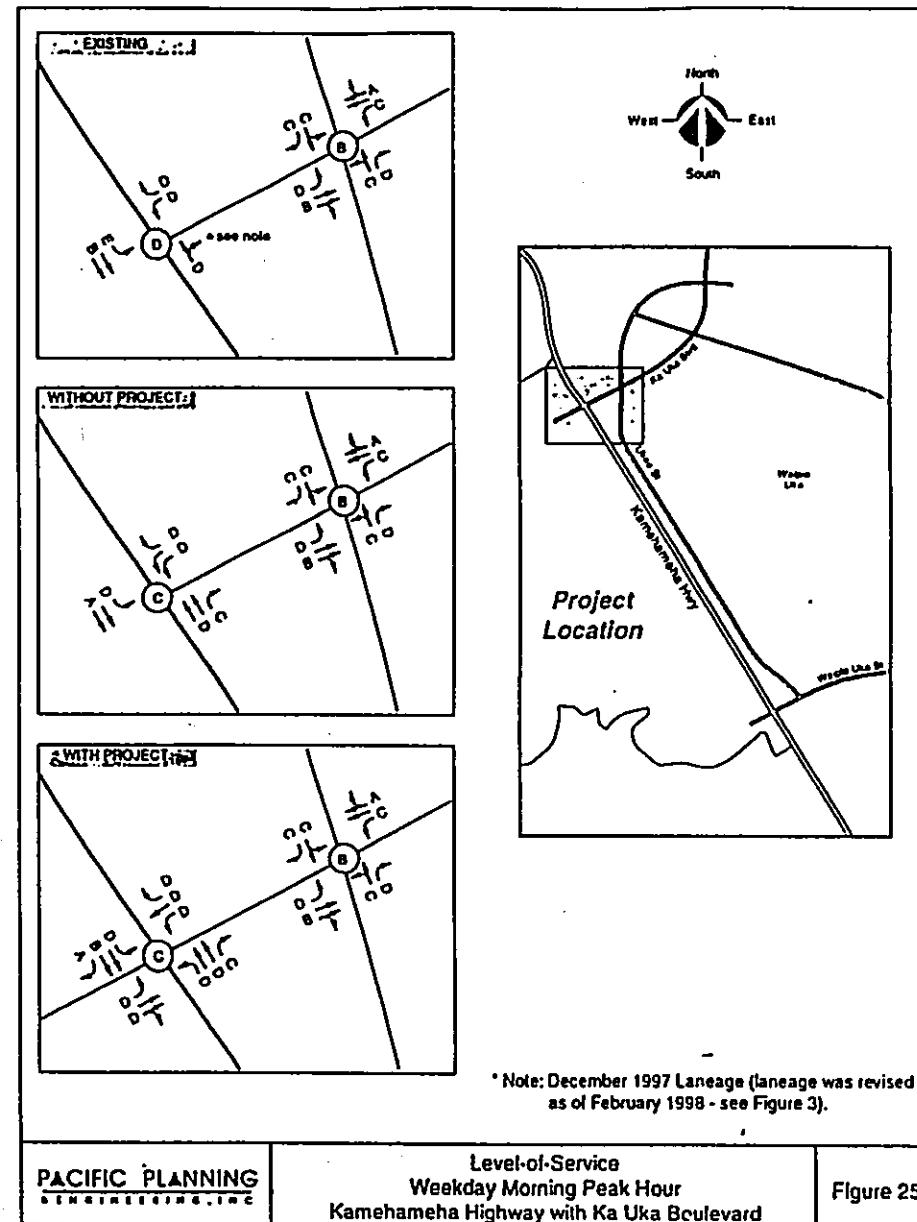
Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

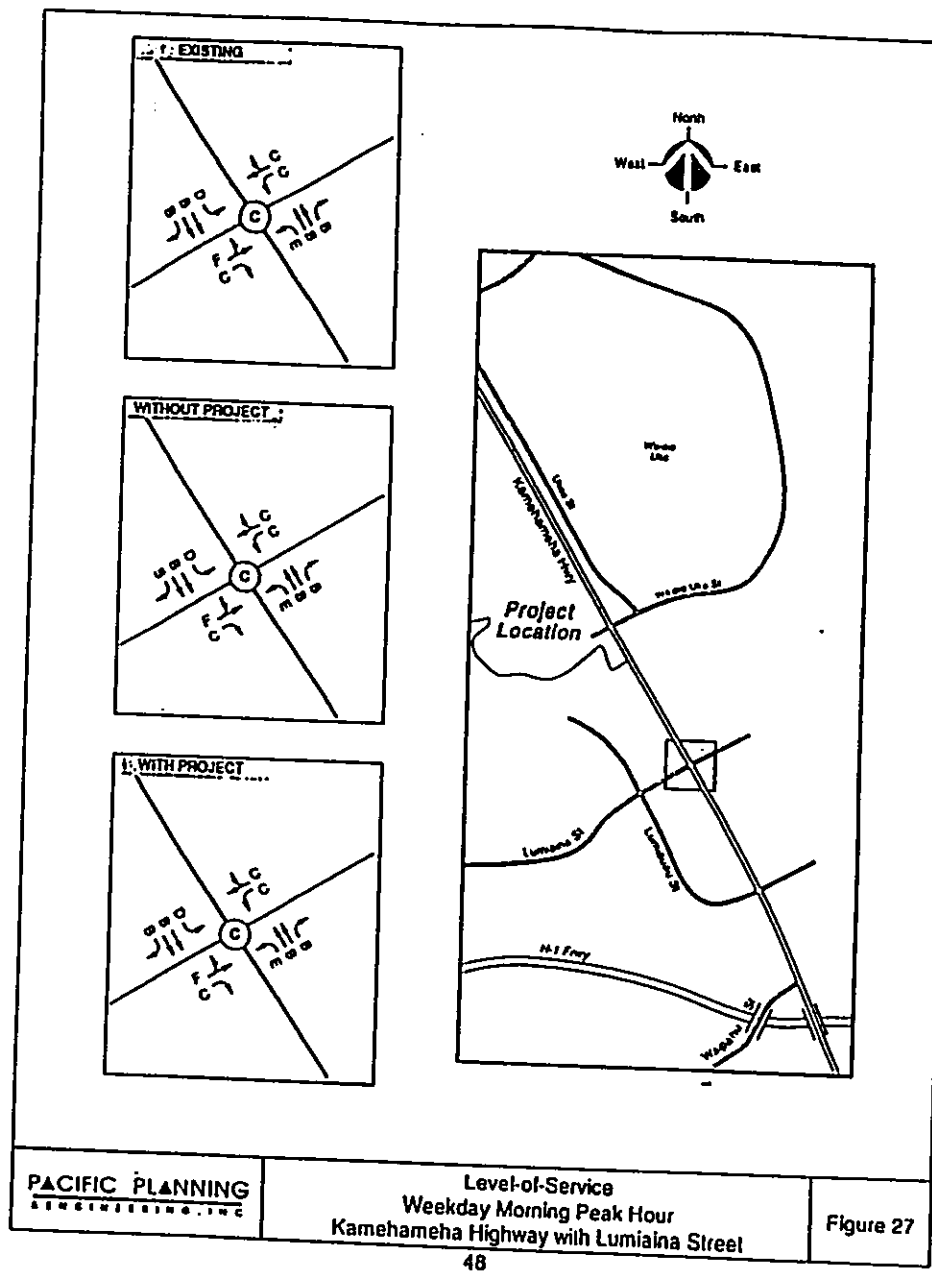
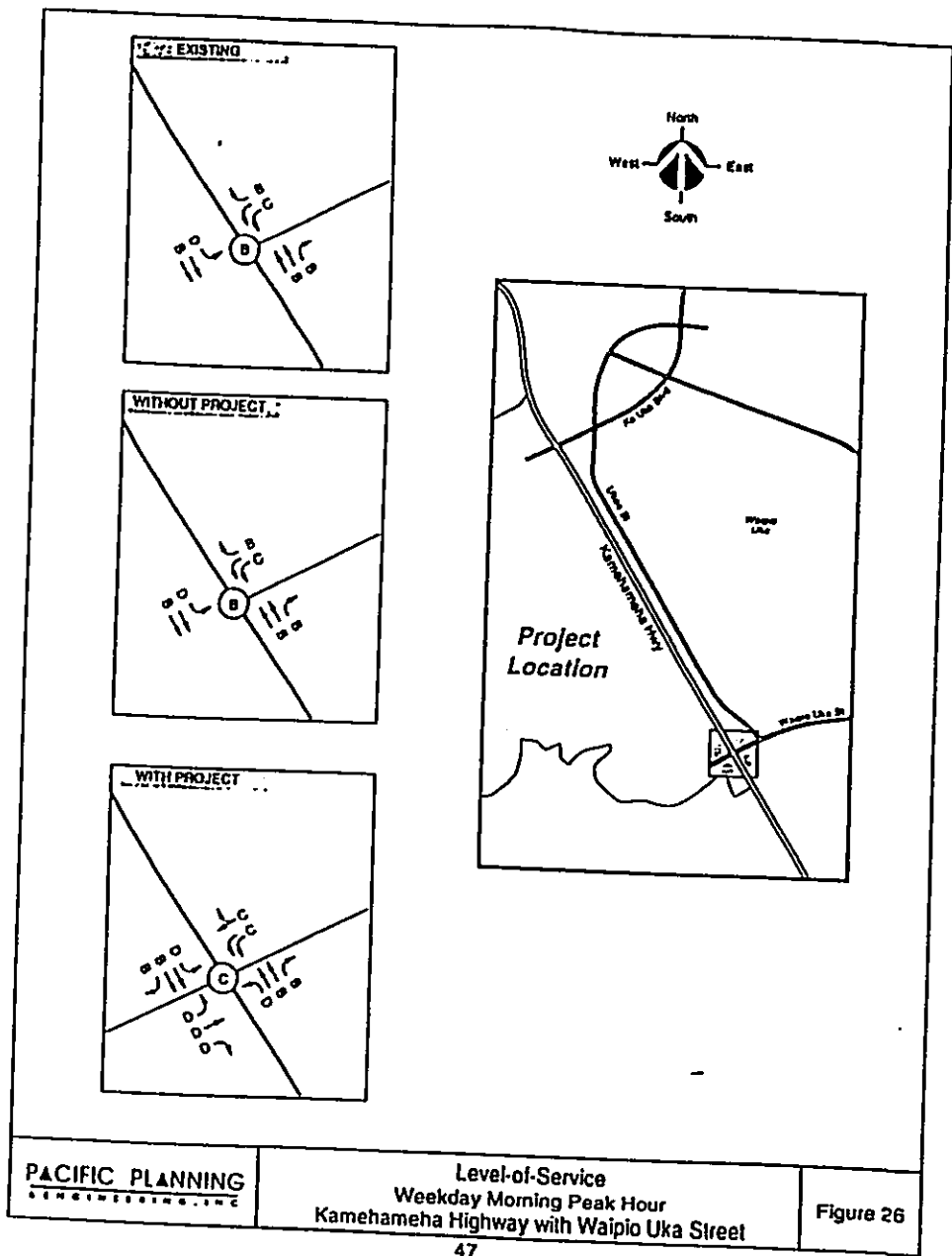
- With the project, this intersection is expected to operate at essentially the same overall level-of-service as without the project.

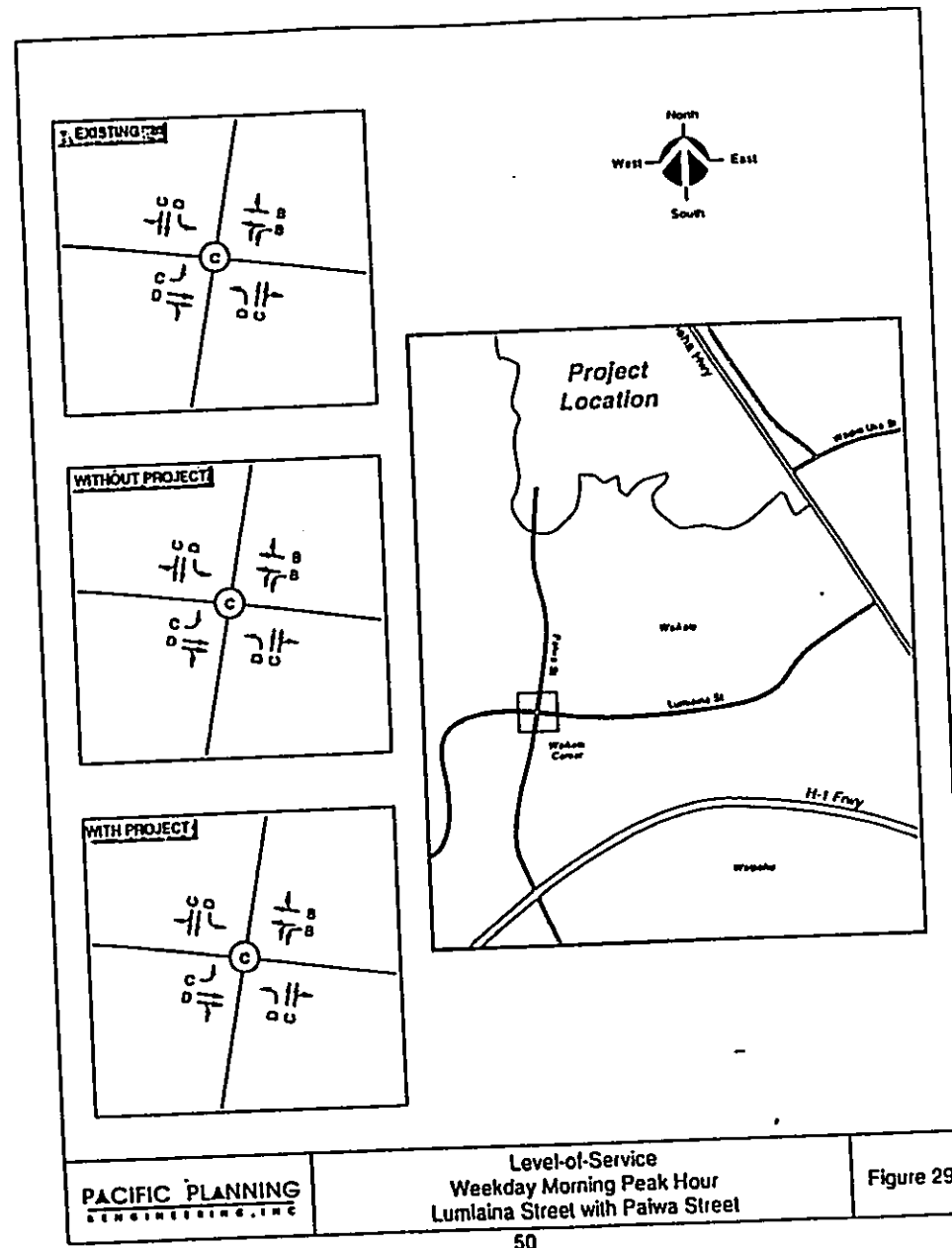
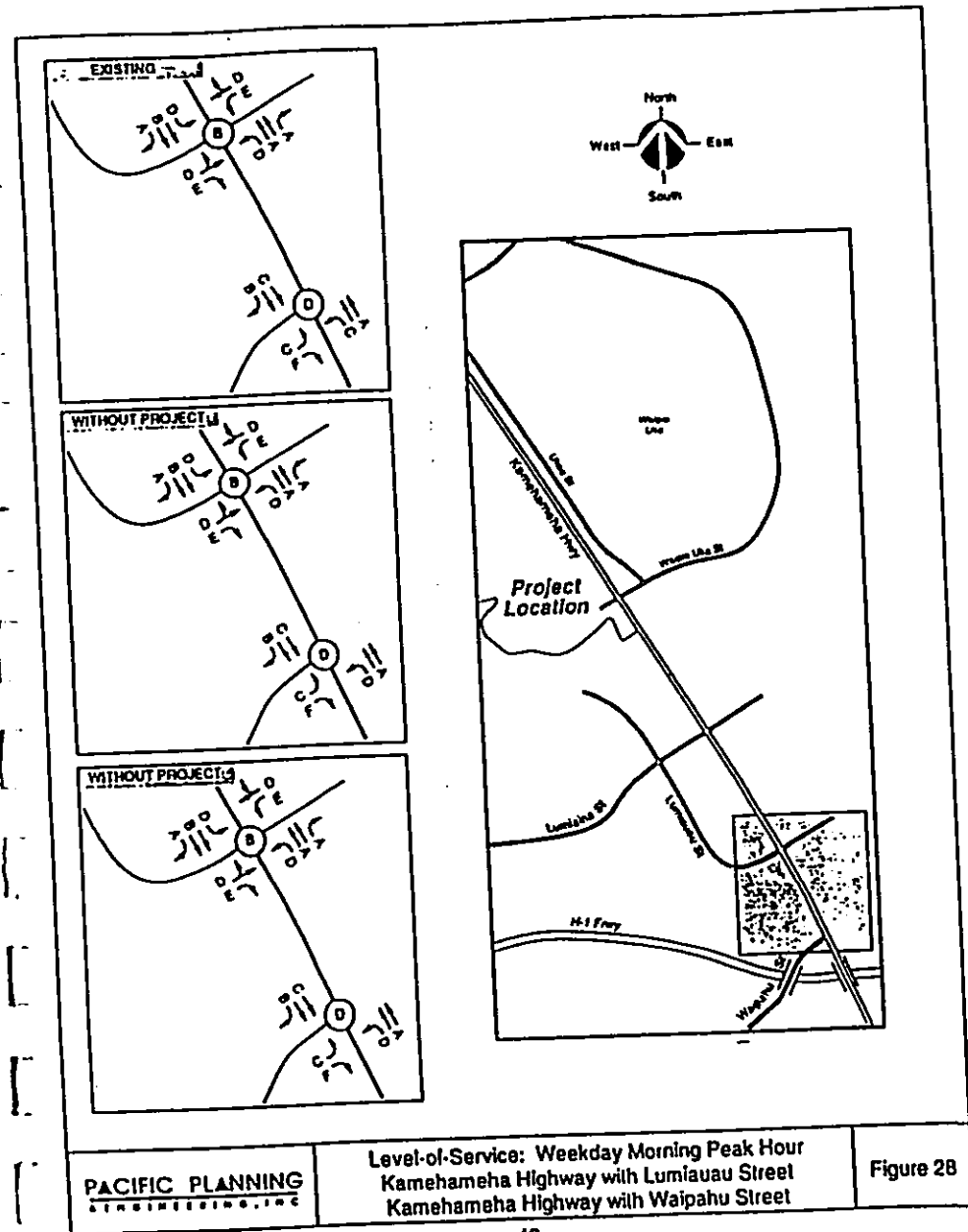
Palua Street with H-1 Freeway Eastbound Offramp (Figures 30, 36 and 42)

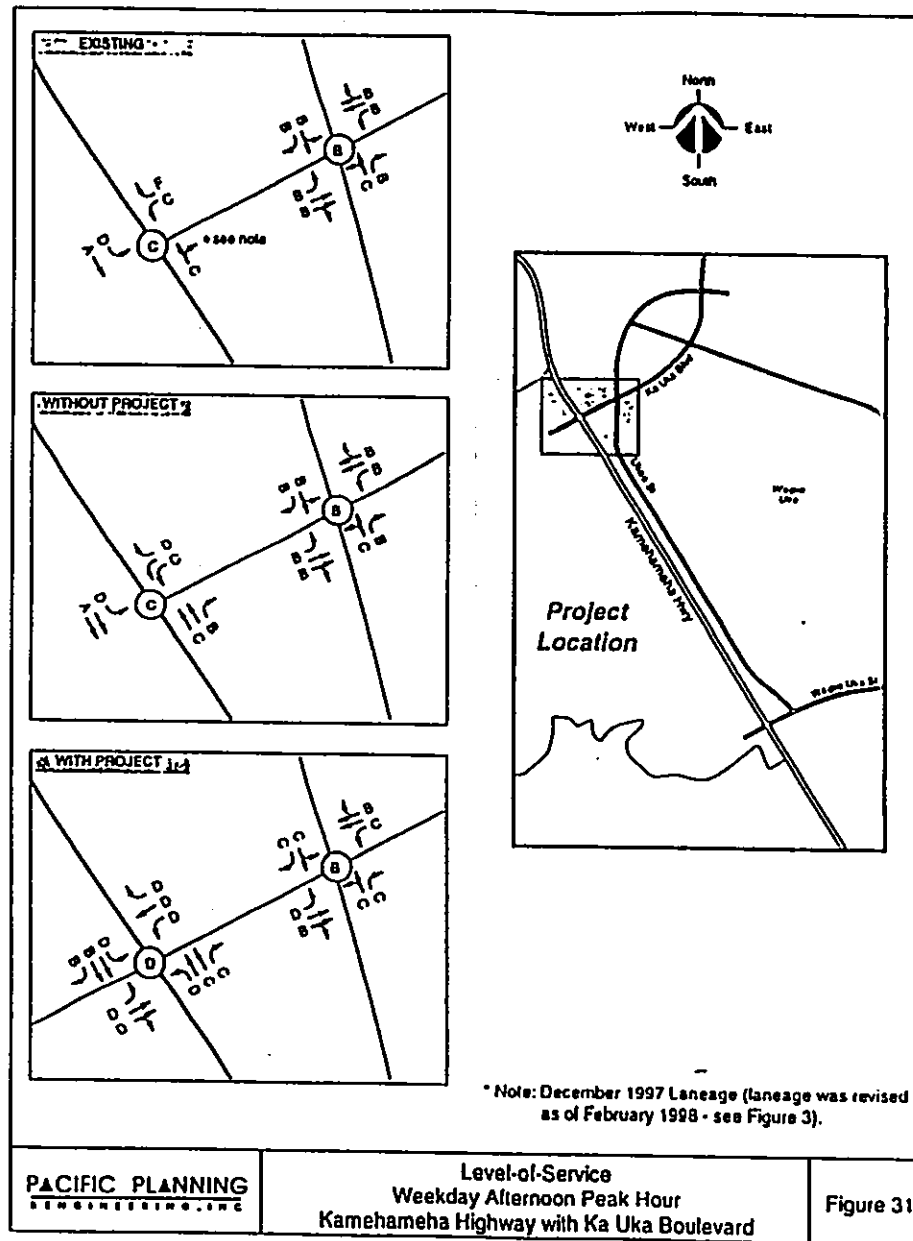
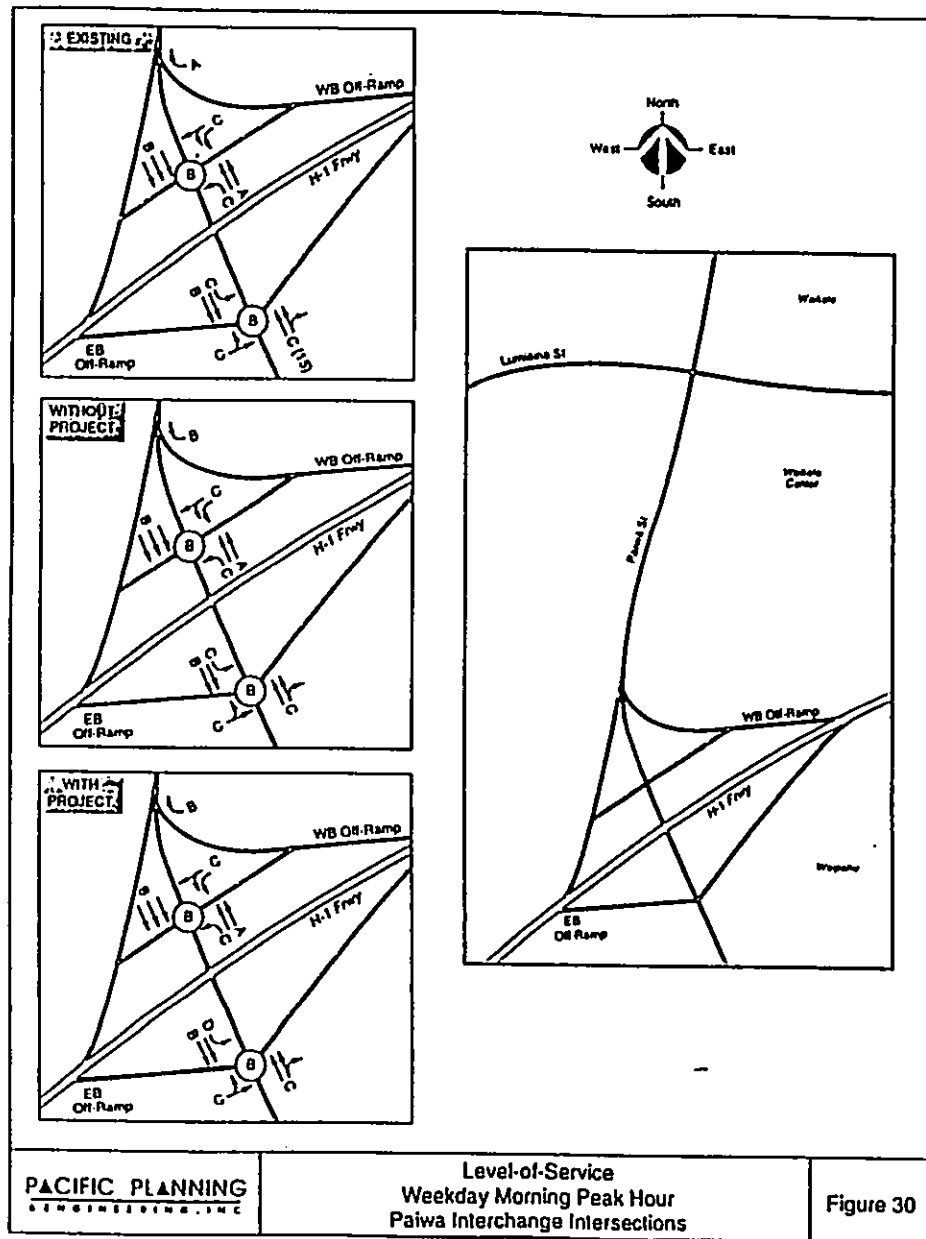
Recommended Laneage - No modifications are necessary at this intersection due to the proposed project.

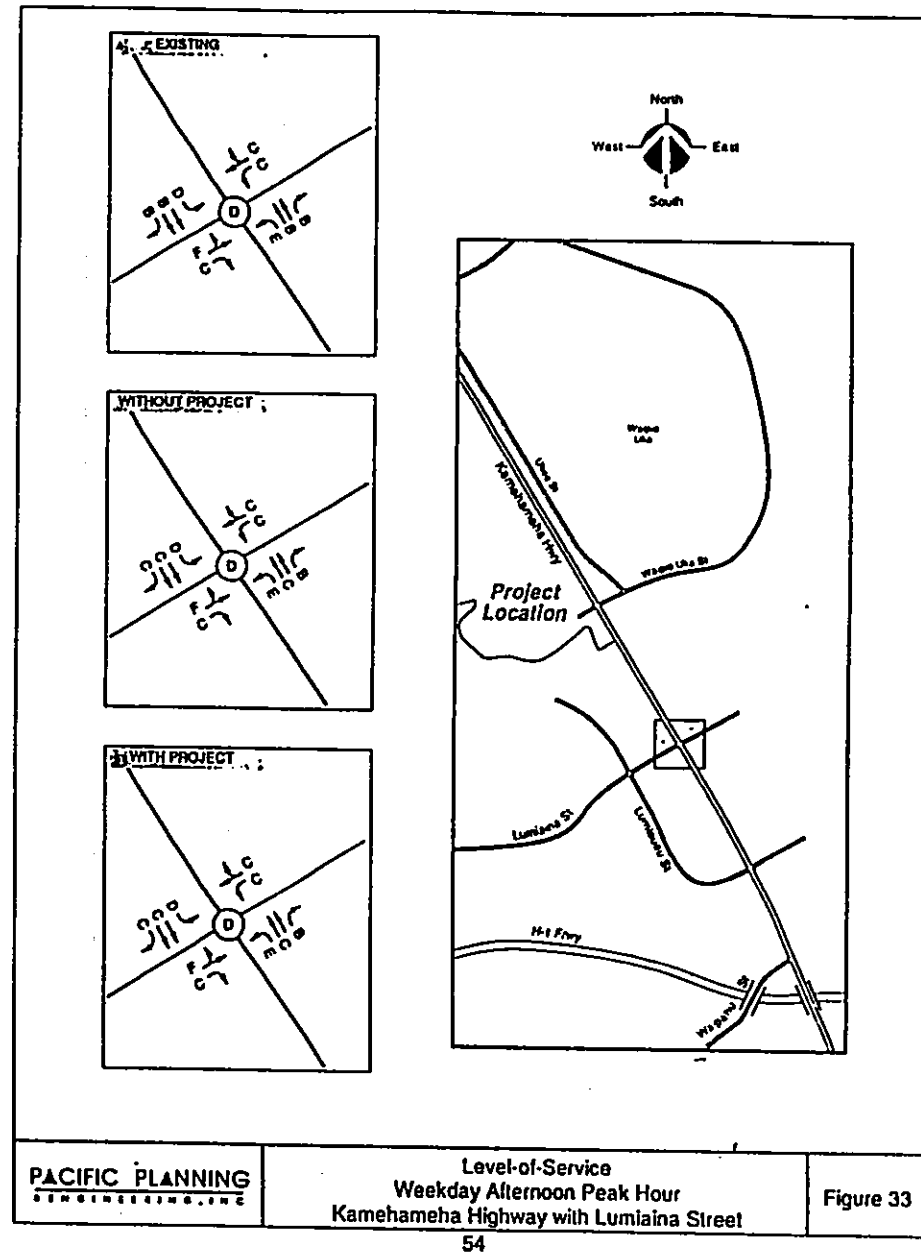
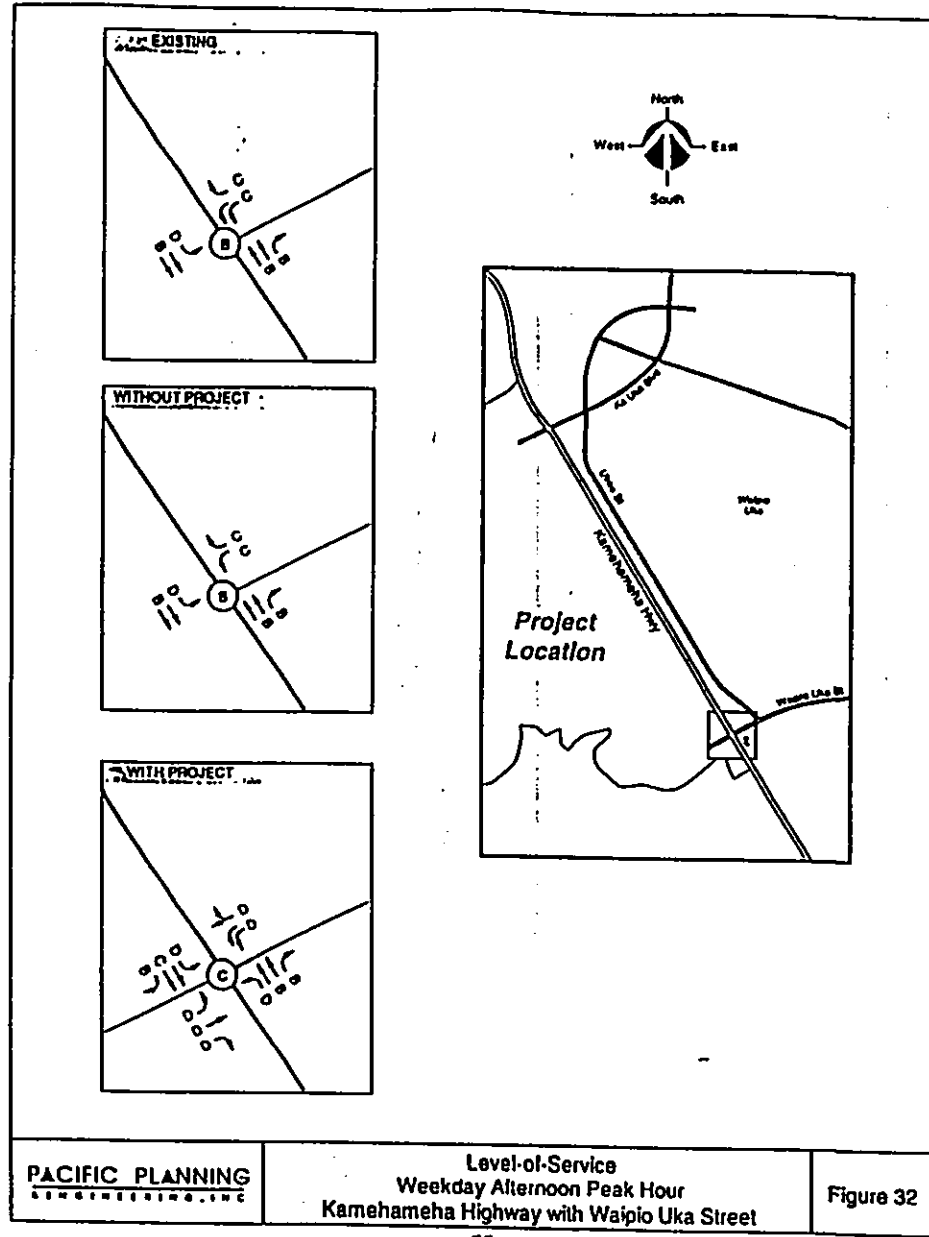
- With the project, this intersection is expected to operate at a level-of-service of LOS D or better.

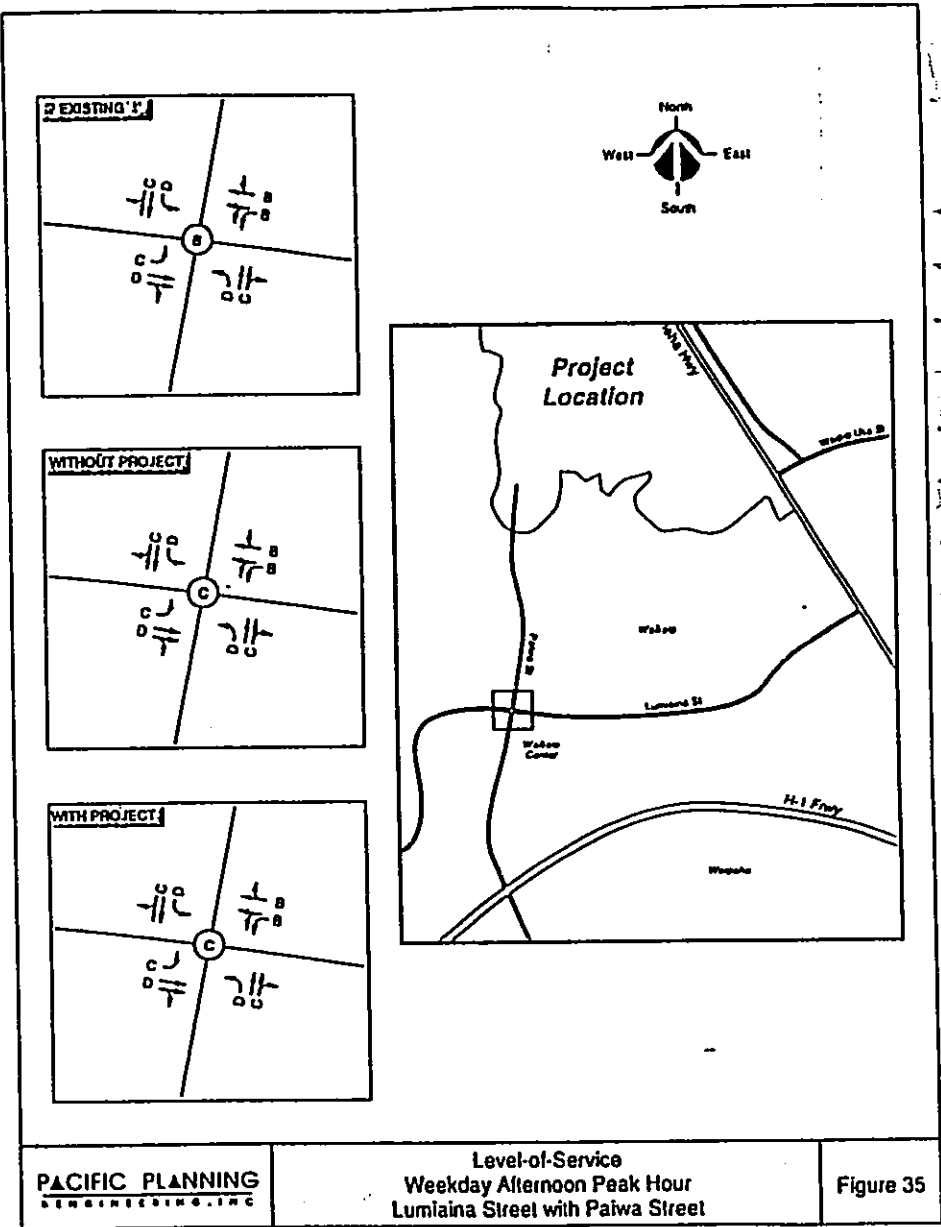
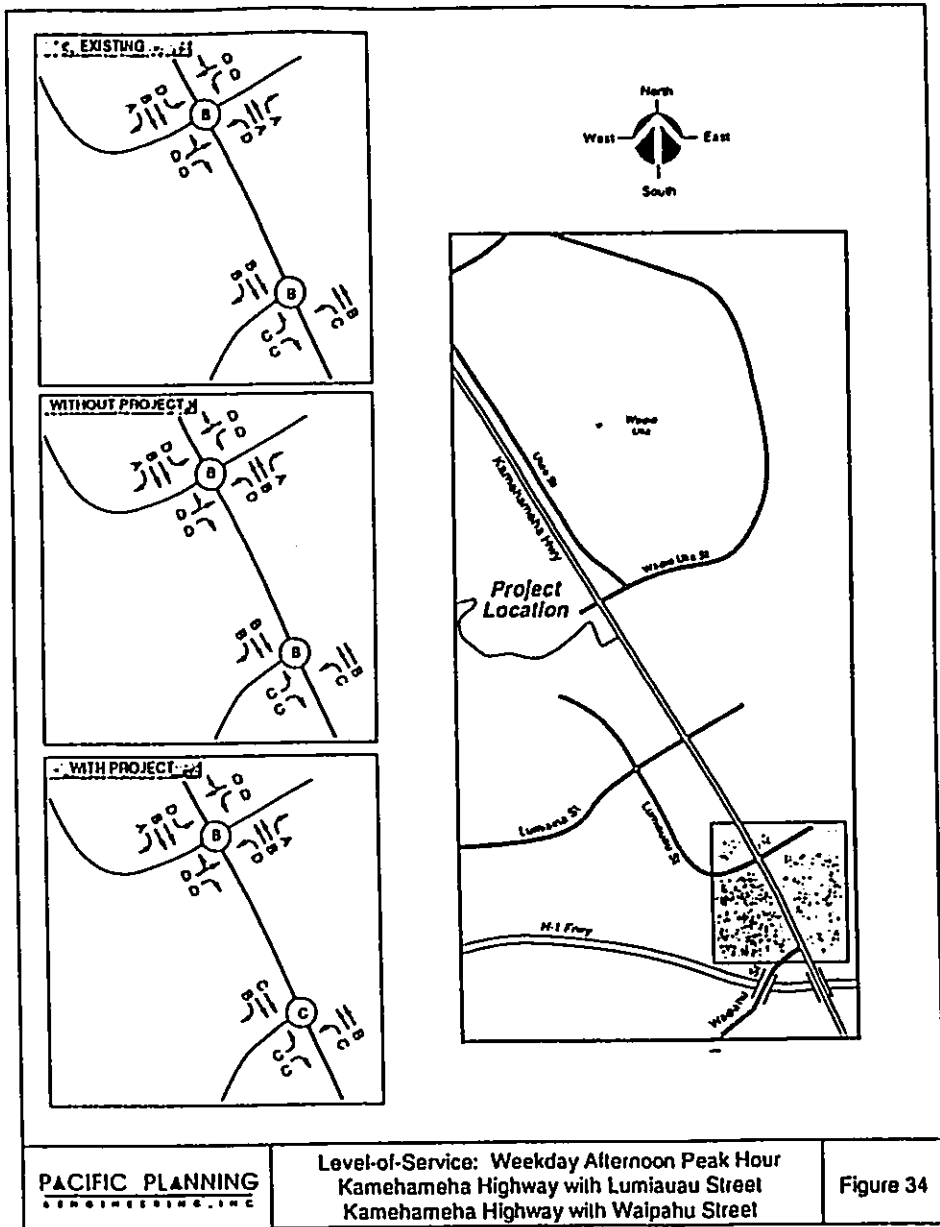


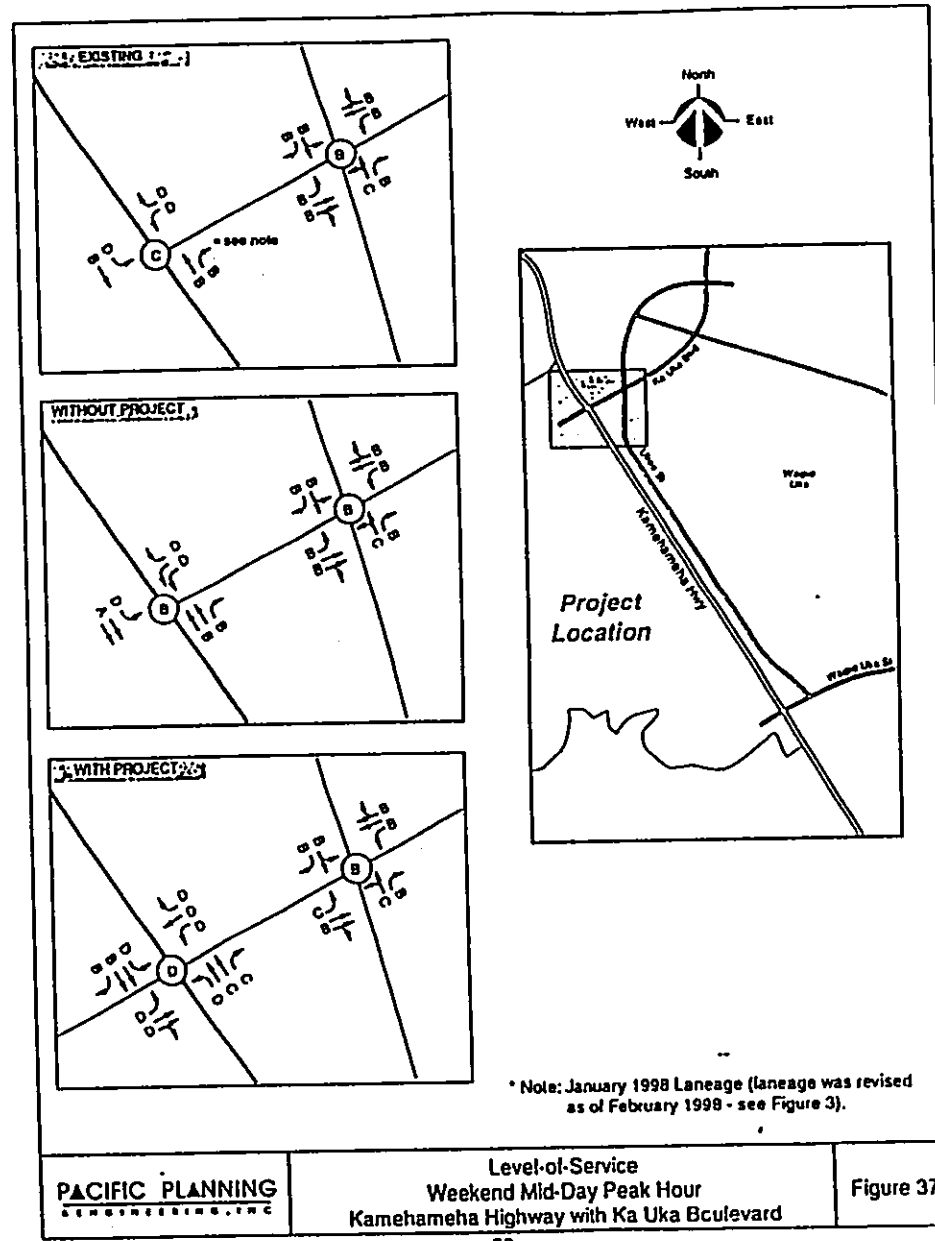
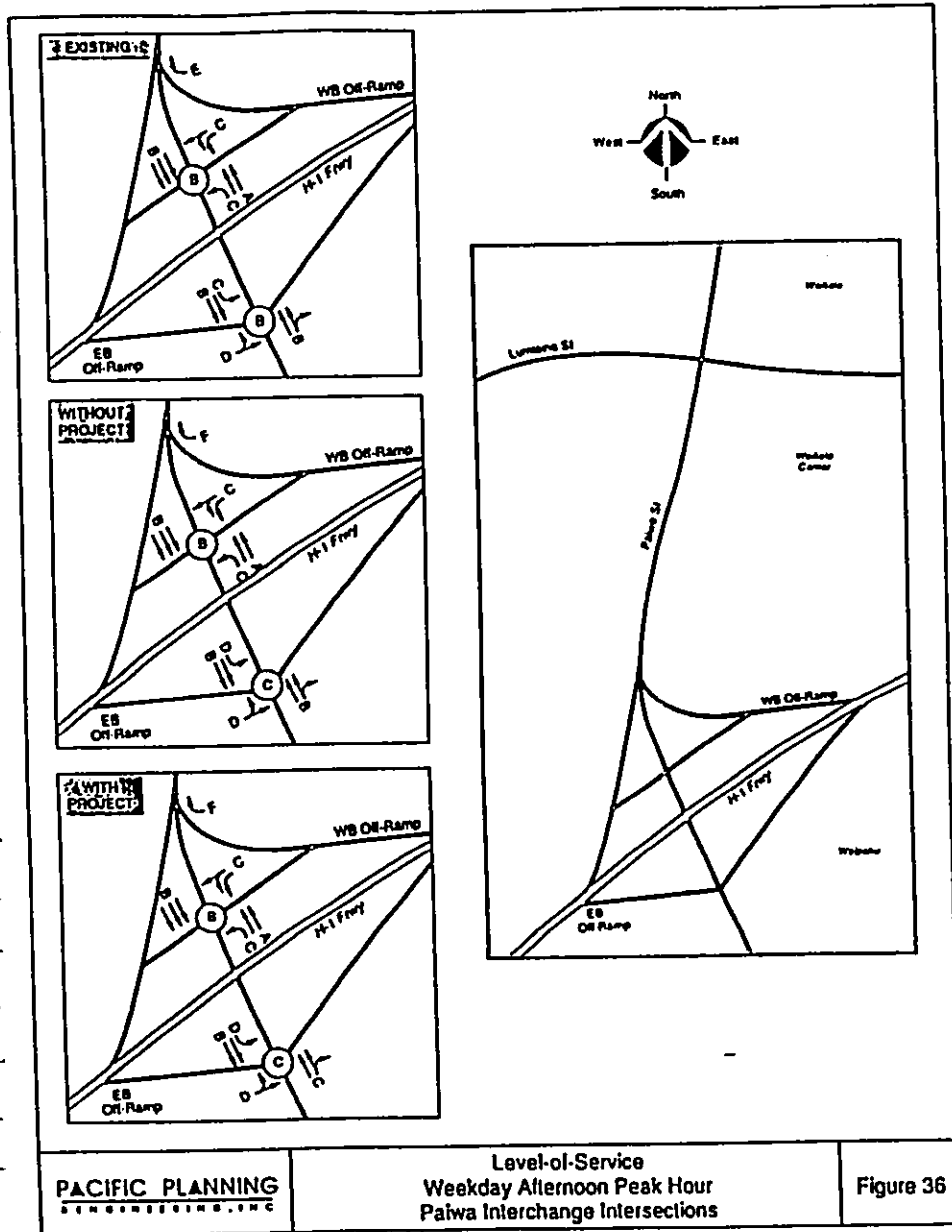


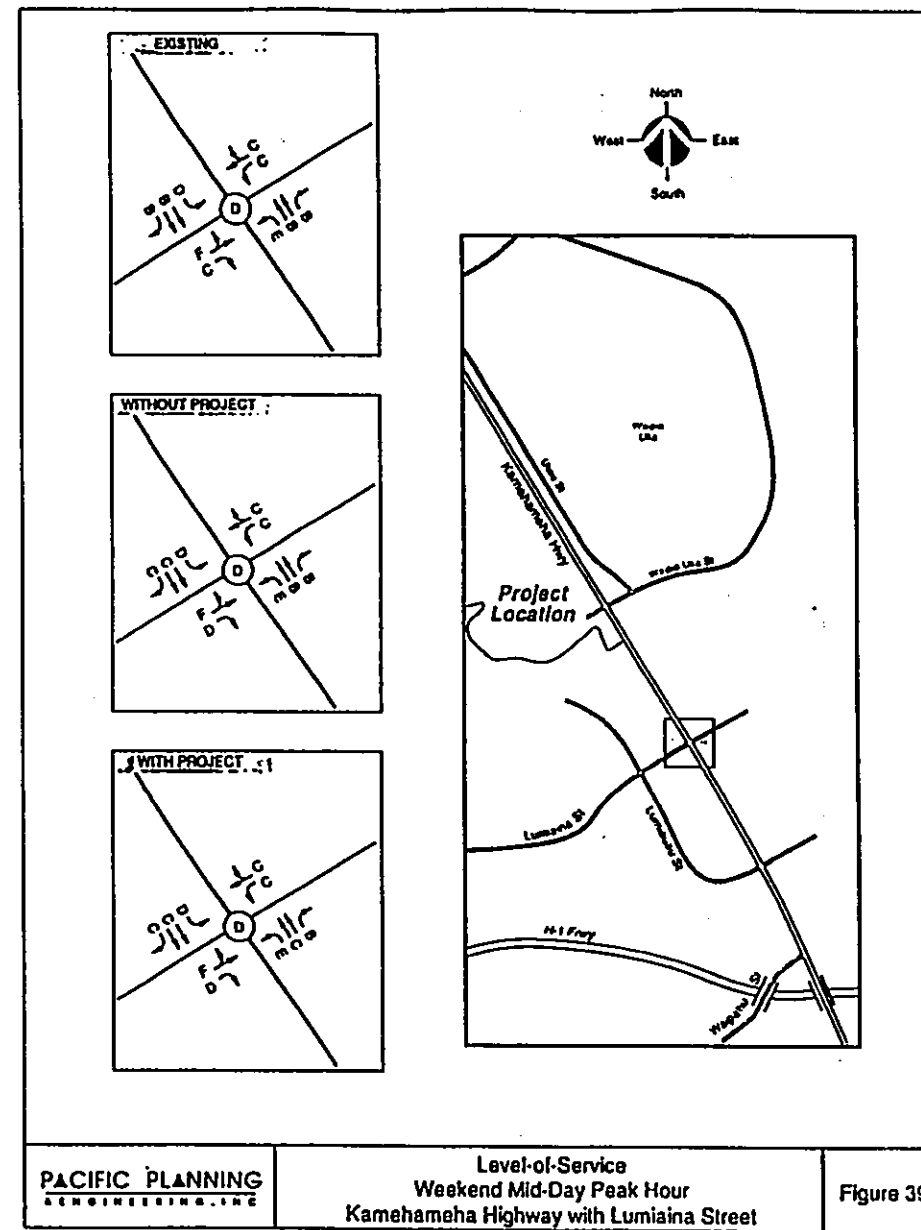
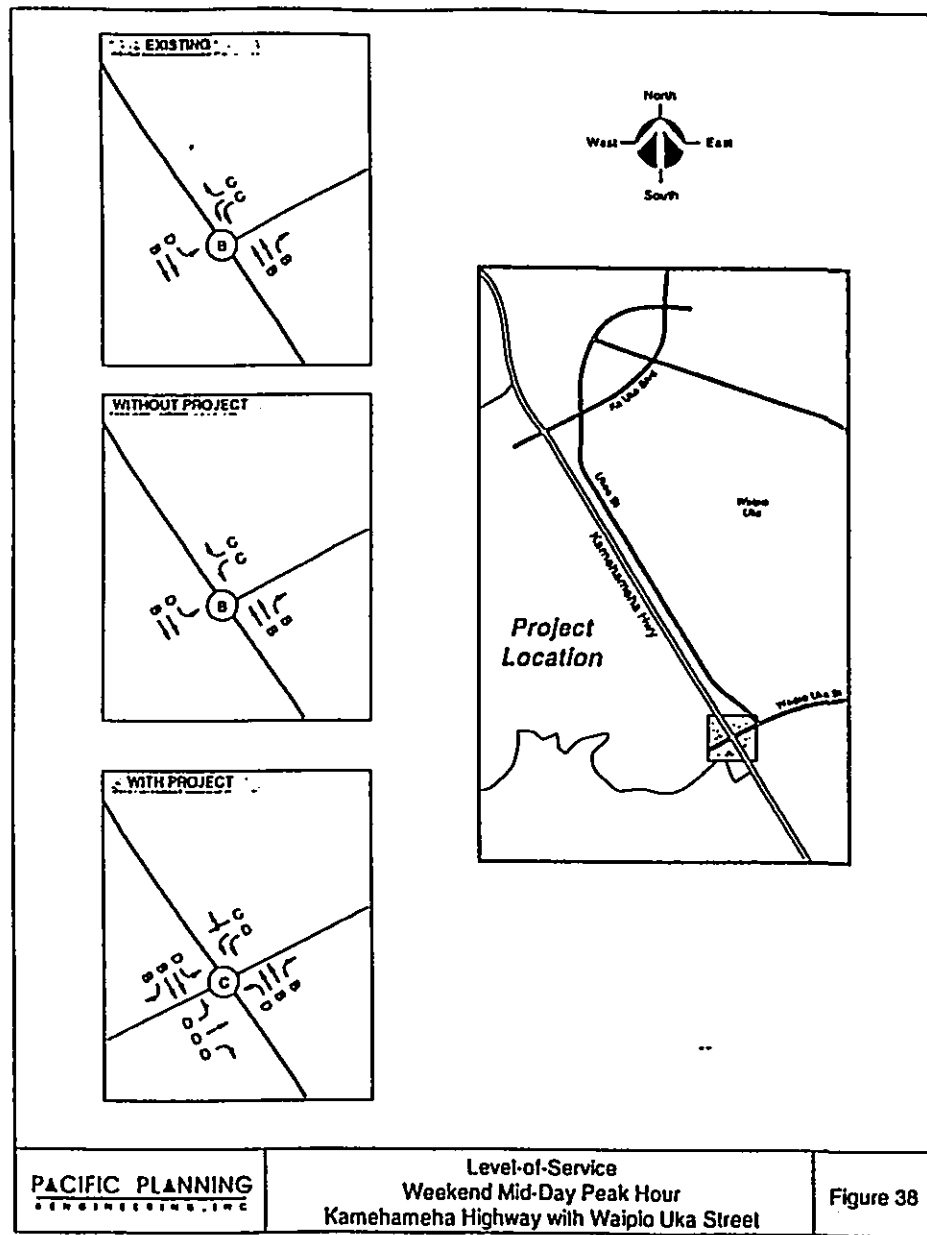


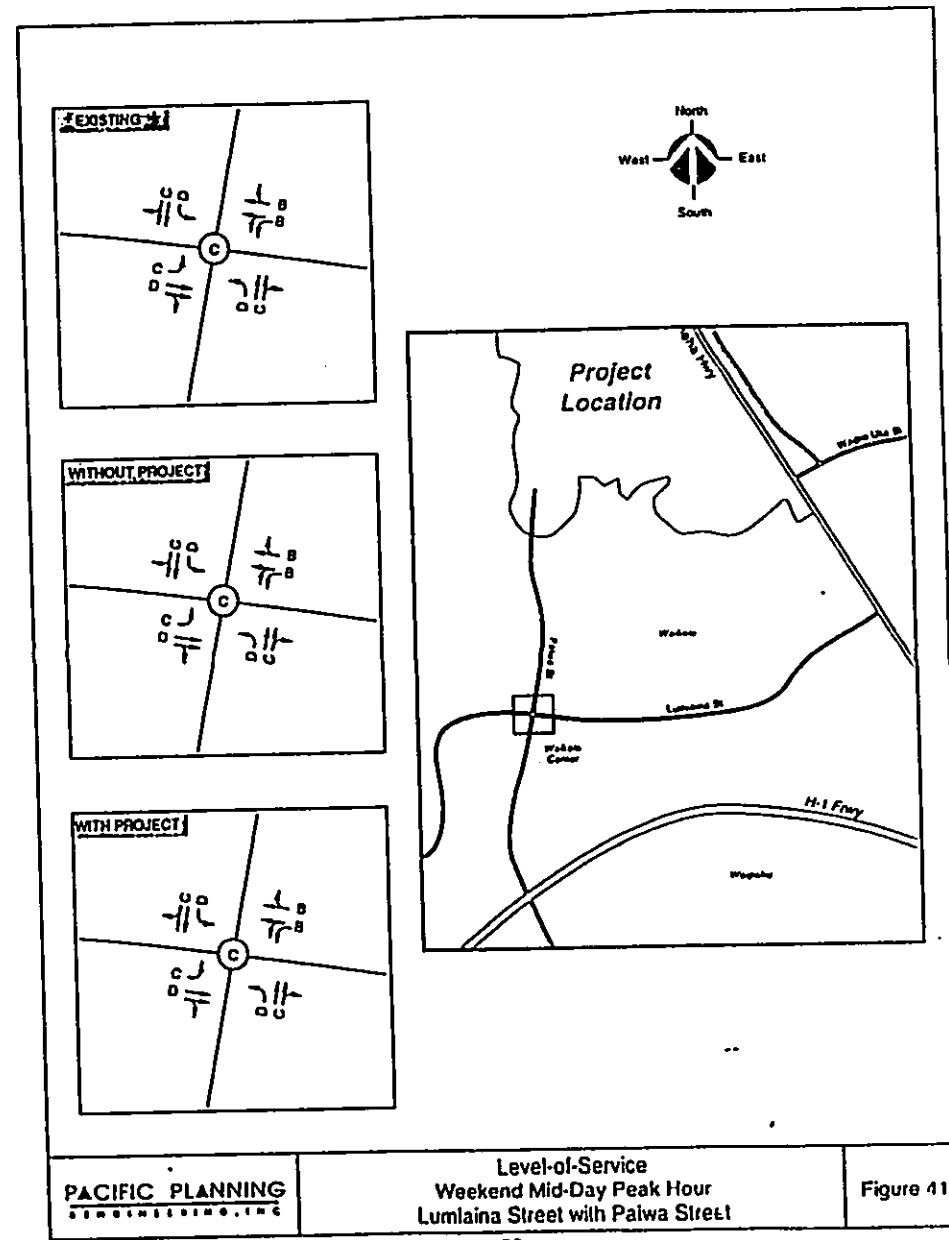
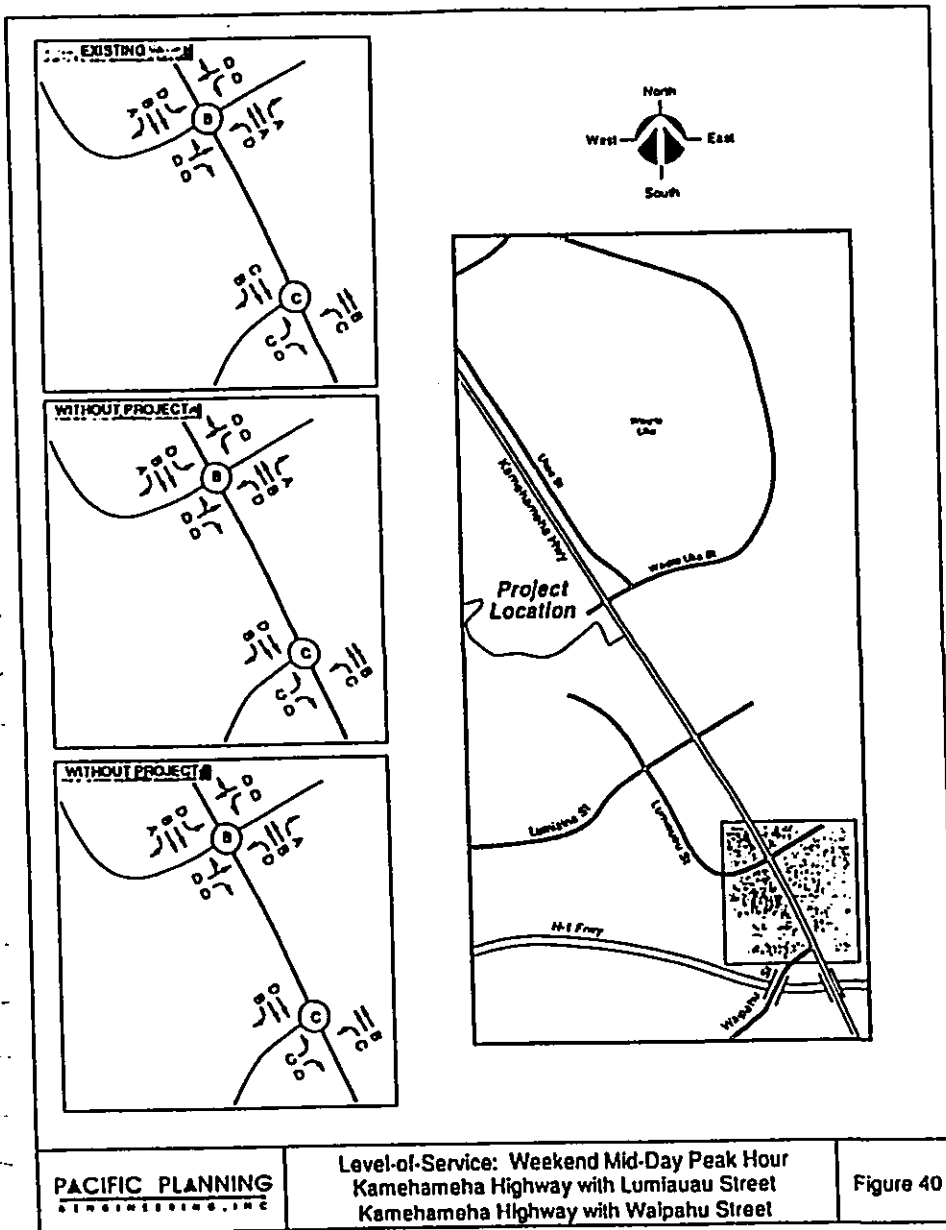


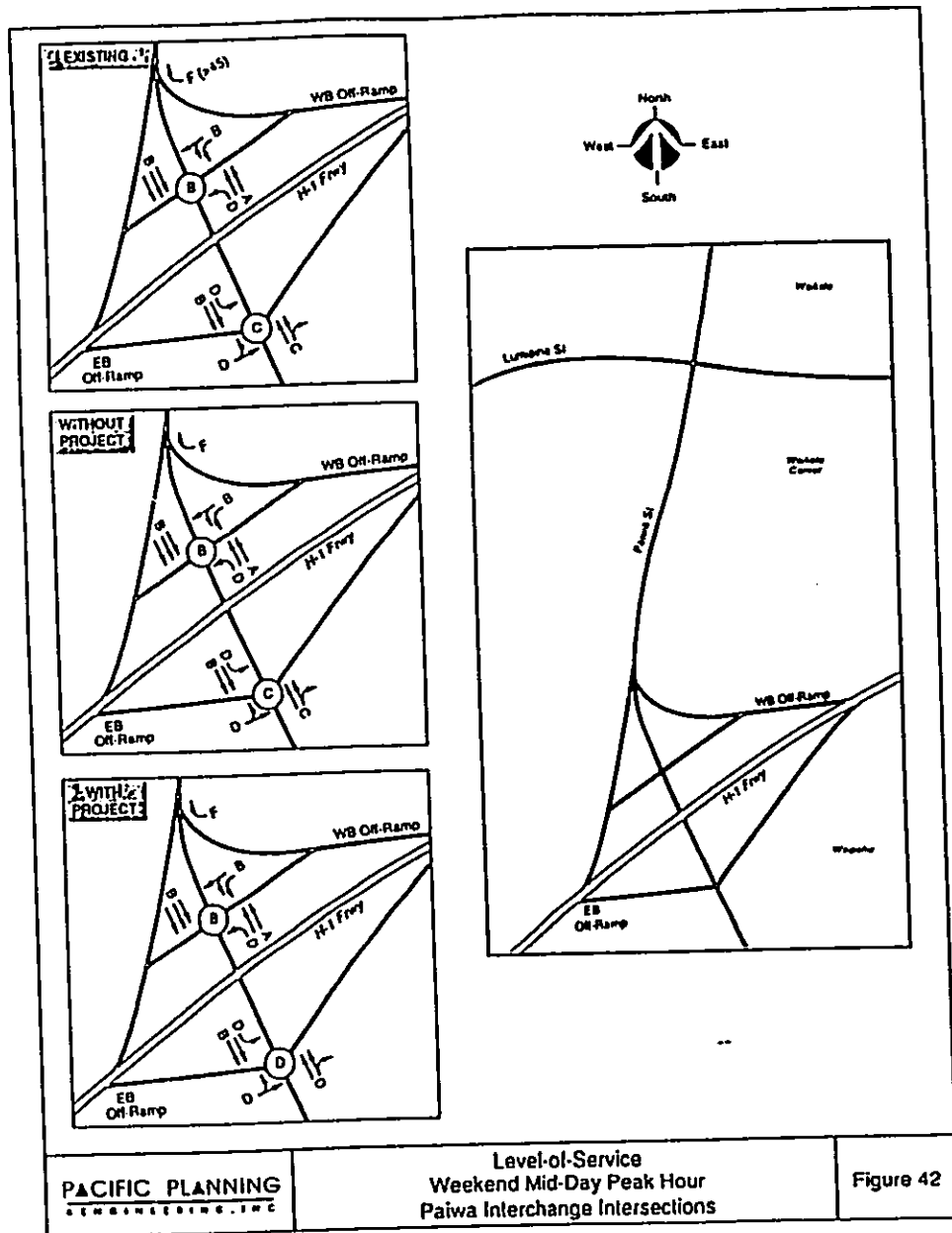












CONCLUSIONS AND RECOMMENDATIONS

The proposed Central Oahu Regional Park will have an impact on traffic flow at the study intersections when it is completed in the year 2005. Laneage recommendations for each study intersection are described below and shown on Figure 43.

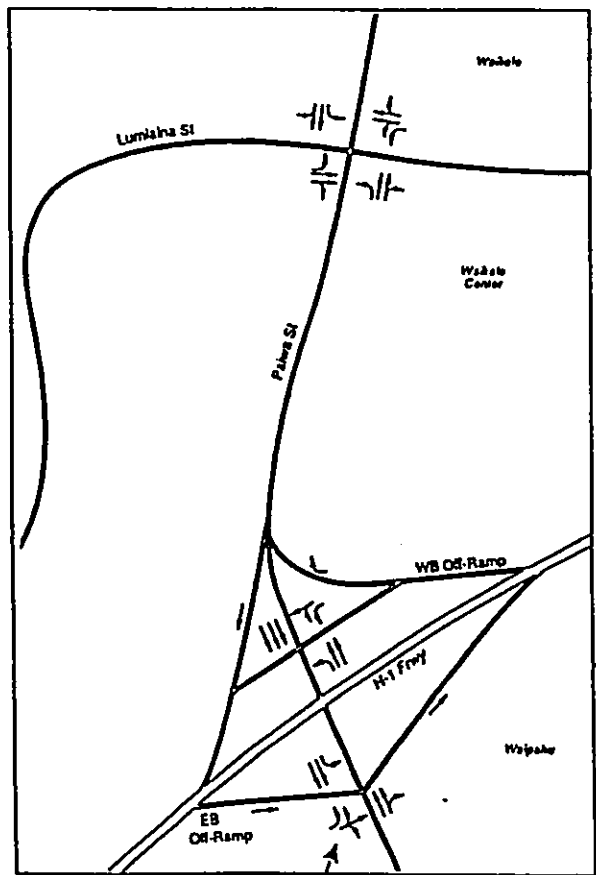
Kamehameha Highway with Ka Uka Boulevard

The addition of an eastbound leg at this intersection would result in reduced levels-of-service (LOS). However, with the recommended laneage configuration described below, these impacts can be minimized.

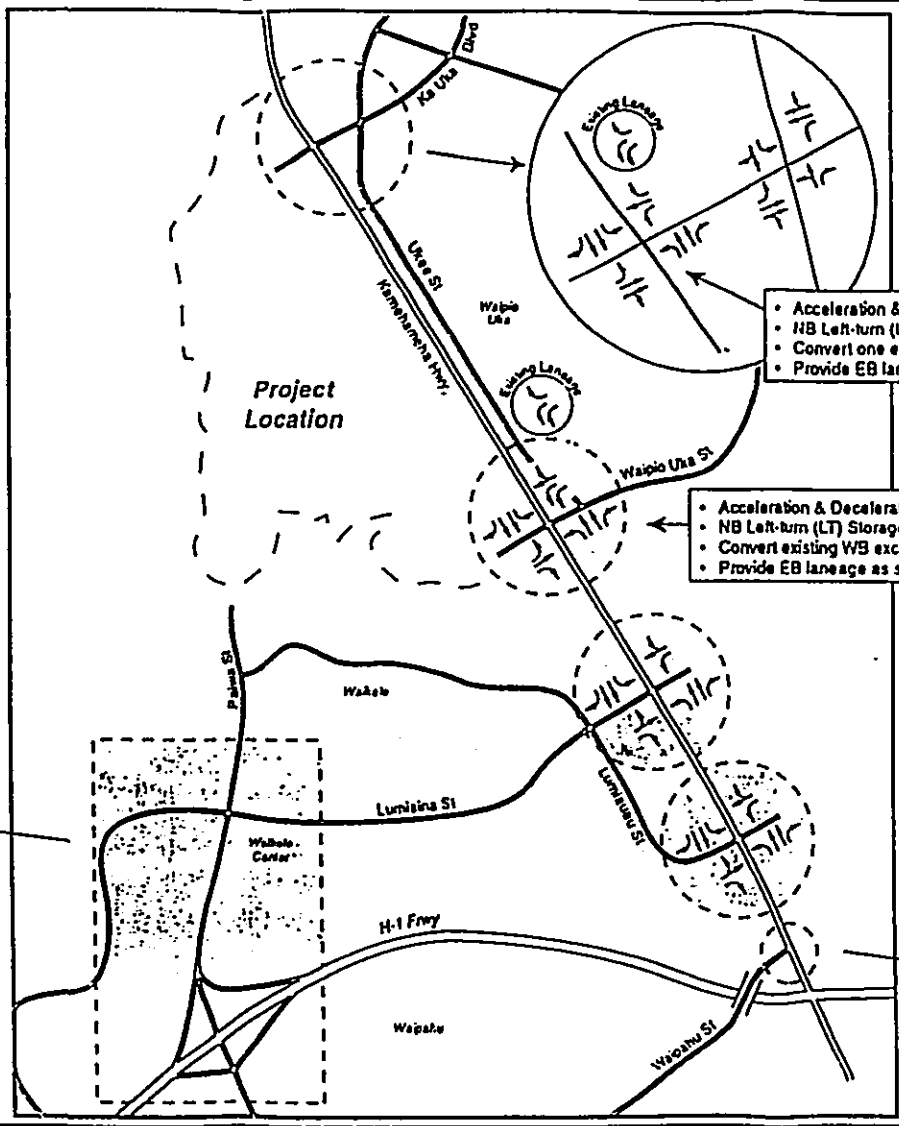
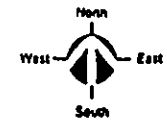
- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- An exclusive left-turn lane, a through lane and an exclusive right-turn lane on the westbound leg of Ka Uka Boulevard.
- An exclusive left-turn lane, a through lane and a shared through and right-turn lane on the eastbound leg of Ka Uka Boulevard.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Ka Uka Boulevard with Ukee Street

There would be additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.



Provide for two left-turn lanes as shown to reduce queuing



- Acceleration & Deceleration lanes on Kam. Hwy.
- NB Left-turn (LT) Storage Lane on Kam. Hwy.
- Convert one existing WB exclusive LT lane into a TH lane.
- Provide EB laneage as shown.

- Acceleration & Deceleration lanes on Kam. Hwy.
- NB Left-turn (LT) Storage Lane on Kam. Hwy.
- Convert existing WB exclusive RT lane into a shared TH/RT lane.
- Provide EB laneage as shown.



Kamehameha Highway with Waipio Uka Street

The addition of an eastbound leg at this intersection would result in reduced levels-of-service (LOS). However, with the recommended laneage configuration described below, these impacts can be minimized.

- Northbound exclusive left-turn lane on Kamehameha Highway.
- Southbound exclusive right-turn lane on Kamehameha Highway.
- One shared through/right-turn lane with double left-turn lanes on the westbound leg of Ka Uka Boulevard.
- One through lane with separate left- and right-turn lanes on the eastbound leg.
- On Kamehameha Highway fronting the project, acceleration and deceleration lanes should be provided to facilitate entering and exiting the project.

Kamehameha Highway with Lumialna Street

Currently, motorists turning left from Lumialna Street to northbound Kamehameha Highway experience LOS F conditions during all three study periods. This is caused by the heavy left-turn traffic volume (a.m. - 353 vehicles, p.m. - 409 vehicles, Sat - 477 vehicles). The LOS F condition will continue in the future without or with the project. A possible method to improve this condition would be to modify the signal timing to give more time to Lumialna Street. Another method would be to separate the eastbound and westbound phases along Lumialna Street which would eliminate existing left-turn conflicts.

Kamehameha Highway with Lumiauau Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Kamehameha Highway with Waipahu Street

There would be additional delays along Kamehameha Highway caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Lumialna Street with Palwa Street

Motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

Palwa Street with Westbound Off-Ramp (Palwa Interchange)

Currently motorists turning right from the off-ramp to Palwa Street experience long delays, LOS F, during the afternoon and mid-day study periods. The observed maximum vehicle queue was 21 vehicles which was contained in the provided storage lane. Motorists would experience additional delays caused by the increased traffic to and from the park. However, the intersection would operate at essentially the same overall LOS as without the project.

Palwa Street with Eastbound Off-Ramp (Palwa Interchange)

During the weekday morning and afternoon peak hours, motorists would experience additional delays caused by the increased traffic to and from the park. However, the existing intersection configuration has sufficient capacity to accommodate the increase.

During the weekend mid-day peak hour, there are 449 left-turns being made from the eastbound off-ramp. Observed queues of 16 vehicles occurred several times during the peak hour. The Highway Capacity Manual states that double

left-turns be considered when left-turn traffic volume exceeds 300 vehicles per hour.

With the project, the forecasted left-turn volume on the eastbound off-ramp is expected to increase to 645 vehicles. Although the level-of-service indicates LOS D, double left-turn lanes should be considered to reduce the possibility of vehicles queuing onto the freeway. Double left-turn lanes at this intersection can be accommodated within the existing right-of-way.

Special Events

Since the recommendations are based upon probable day-to-day events, large events such as a major baseball game in the 4,000 seat stadium, special traffic controls should be implemented if necessary. The traffic control could be similar to what is done for the Special Events Arena at the University of Hawaii and at Aloha Stadium. Examples of such controls include the use of traffic control personnel and coning.

Phase 1 Improvements

The recommended improvements described above are for full build-out conditions. The Central Oahu Regional Park will be constructed in several phases. Phase 1 will consist of general recreational uses (i.e. baseball, soccer and multi-purpose fields). Access will be via Waipio Uka Street only, therefore, roadway improvements for Phase 1 would be those described earlier for Waipio Uka Street.

APPENDIX A

TRAFFIC COUNT DATA

AM Ka Uka-Kam Hwy

Project : 78.0 Waiola Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM		44	28	9		137	187		0	
6:30 AM		65	19	5		114	159		2	
6:45 AM		74	18	3		132	181		2	
7:00 AM		89	25	2		137	164		1	
7:15 AM		88	25	4		128	188		3	
7:30 AM		99	16	5		140	186		0	
7:45 AM		98	9	4		144	220		1	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	0	374	75	15	0	547	758	0	5	0
8:00 AM	TOTAL	449		3.34%		TOTAL	1305		0.38%	

Direction EASTBOUND East-West Road Ka Uka Blvd Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM						9		28	0	
6:30 AM						19		30	2	
6:45 AM						18		24	2	
7:00 AM						11		25	3	
7:15 AM						15		45	3	
7:30 AM						18		65	1	
7:45 AM						23		53	3	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	0	0	0	0	0	67	0	188	10	0
8:00 AM	TOTAL	0		#DIV/0!		TOTAL	255		3.92%	

AM Ka Uka-Ukee

Project : 78.0 Waiola Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:30 AM	14	9	57			0	5	2		
6:45 AM	9	7	48			0	1	1		
7:00 AM	9	4	54			0	1	4		
7:15 AM	12	10	63			0	2	4		
7:30 AM	20	6	77			0	2	4		
7:45 AM	22	8	64			0	6	5		

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	63	28	258	0	0	0	11	17	0	0
8:00 AM	TOTAL	349		0.00%		TOTAL	28		0.00%	

Direction EASTBOUND East-West Road Ka Uka Blvd Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:30 AM	12	125	4			20	33	0		
6:45 AM	7	138	4			14	32	0		
7:00 AM	5	152	6			15	23	0		
7:15 AM	9	140	3			20	44	1		
7:30 AM	11	138	6			35	59	0		
7:45 AM	7	140	8			22	49	1		

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	32	570	21	0	0	92	175	2	0	0
8:00 AM	TOTAL	623		0.00%		TOTAL	269		0.00%	

AM Waipio Uka-Kam Hwy

Project : 78.0 Waiala Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM		71	79	2		1	195			
6:30 AM		79	94	8		2	176			
6:45 AM		83	71	1		3	196			
7:00 AM		104	77	2		2	173			
7:15 AM		108	108	3		3	200			
7:30 AM		104	127	5		2	202			
7:45 AM		102	83	2		10	233			

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	0	418	393	12	0	17	808	0	0	0
8:00 AM	TOTAL	809		1.48%		TOTAL	825		0.00%	

Direction EASTBOUND East-West Road Waipio Uka Blvd Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM						107		1	3	
6:30 AM						128		5	4	
6:45 AM						98		9	2	
7:00 AM						102		10	5	
7:15 AM						103		7	4	
7:30 AM						130		11	6	
7:45 AM						99		5	3	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	0	0	0	0	0	434	0	33	18	0
8:00 AM	TOTAL	0	0	#DIV/0!		TOTAL	467		3.85%	

AM Lumialna-Kam Hwy

Project : 78.2 Waiala Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM	9	55	2		66	2	186	89		277
6:30 AM	9	78	6		91	0	199	139		338
6:45 AM	15	84	6		105	0	159	133		292
7:00 AM	5	110	4		119	0	196	146		342
7:15 AM	16	144	14		174	1	176	131		308
7:30 AM	22	154	15		191	5	218	141		364
7:45 AM	21	137	12		170	4	194	118		316
8:00 AM	22	137	9		168	3	206	81		290

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	64	545	45	0	654	10	784	538	0	1330
8:00 AM	TOTAL	654		0.00%		TOTAL	1330		0.00%	

Direction EASTBOUND East-West Road Lumialna Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM	91	5	29		125	11	14	2		27
6:30 AM	94	3	22		119	10	19	5		34
6:45 AM	84	8	12		104	10	19	4		33
7:00 AM	73	3	27		103	20	7	5		32
7:15 AM	87	3	23		113	15	13	13		41
7:30 AM	84	7	24		115	14	16	6		36
7:45 AM	48	4	24		76	24	9	7		40
8:00 AM	32	7	27		66	12	11	4		27

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	292	17	98	0	407	73	45	31	0	149
8:00 AM	TOTAL	407		0.00%		TOTAL	149		0.00%	

AM Lumlauau-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM	6	64	5		75	0	226	0		226
6:30 AM	3	88	1		92	0	231	0		231
6:45 AM	9	103	1		113	0	180	1		181
7:00 AM	2	113	7		122	1	239	3		243
7:15 AM	9	171	3		183	2	208	4		214
7:30 AM	8	182	0		190	1	250	5		256
7:45 AM	17	169	11		197	2	237	3		242
8:00 AM	11	167	16		194	0	243	2		245

8

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	36	635	21	0	692	6	934	15	0	955
8:00 AM	TOTAL	692		0.00%		TOTAL	955		0.00%	

Direction EASTBOUND East-West Road Lumlauau Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM	0	0	89		89	76	4	2		82
6:30 AM	2	1	91		94	57	3	1		61
6:45 AM	1	0	45		46	69	2	1		72
7:00 AM	4	0	49		53	55	1	2		58
7:15 AM	3	2	57		62	50	2	0		52
7:30 AM	7	0	59		66	44	1	2		47
7:45 AM	1	2	35		38	25	1	0		26
8:00 AM	0	0	22		22	23	2	1		26

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	15	4	200	0	219	174	5	4	0	183
8:00 AM	TOTAL	219		0.00%		TOTAL	183		0.00%	

AM Waipahu-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM	15	69	0		84	376	15			391
6:30 AM	23	65	0		88	363	16			379
6:45 AM	23	97	0		120	280	14			294
7:00 AM	37	97	0		134	319	24			343
7:15 AM	48	151	0		199	292	23			315
7:30 AM	42	164	0		206	323	30			353
7:45 AM	32	183	0		195	272	25			297
8:00 AM	33	161	0		194	253	35			288

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	159	575	0	0	734	0	1206	102	0	1308
8:00 AM	TOTAL	734		0.00%		TOTAL	1308		0.00%	

Direction EASTBOUND East-West Road Waipahu Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM	6	0	129		135					
6:30 AM	27	0	111		138					
6:45 AM	16	0	123		139					
7:00 AM	25	0	149		174					
7:15 AM	32	0	141		173					
7:30 AM	26	0	117		143					
7:45 AM	34	0	124		158					
8:00 AM	33	0	107		140					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	117	0	531	0	648	0	0	0	0	0
8:00 AM	TOTAL	648		0.00%		TOTAL	0		#DIV/0!	

AM Lumlanla-Paiwa

Project : 78.0 Walola Sports Complex
Date: 2/12/98

Start Time	Direction NORTHBOUND					Direction SOUTHBOUND				
	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
6:15 AM	12	32	82	2		0	32	0	0	
6:30 AM	15	29	70	1		1	34	0	0	
6:45 AM	11	29	49	3		0	35	1	0	
7:00 AM	10	12	64	3		1	23	0	2	
7:15 AM	14	13	69	7		6	28	1	0	
7:30 AM	19	8	61	1		3	37	2	1	
7:45 AM	13	13	54	1		1	26	1	0	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	56	46	248	12	0	11	114	4	3	0
8:00 AM	TOTAL	350		3.43%		TOTAL	129		2.33%	

Direction EASTBOUND East-West Road Lumlanla Direction WESTBOUND

Start Time	Direction EASTBOUND					Direction WESTBOUND				
	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
6:15 AM	0	12	33	0		142	7	3	0	
6:30 AM	0	6	58	0		198	8	12	4	
6:45 AM	1	11	52	2		191	4	6	3	
7:00 AM	2	7	45	0		249	2	5	3	
7:15 AM	1	4	60	0		179	19	4	6	
7:30 AM	0	6	45	1		119	0	2	5	
7:45 AM	1	3	33	0		143	4	11	8	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	4	20	183	1	0	690	25	22	22	0
8:00 AM	TOTAL	207		0.48%		TOTAL	737		2.99%	

AM WB Offramp-Paiwa St.

Project : 78.2 Walola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM	50	93			143	90	98			188
6:30 AM	63	102			165	117	117			234
6:45 AM	51	100			151	118	164			284
7:00 AM	47	115			162	143	141			284
7:15 AM	79	77			156	128	131			259
7:30 AM	58	95			153	118	93			211
7:45 AM	46	101			147	96	84			180
8:00 AM	39	105			144	85	89			174

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	230	368	0	0	618	0	485	449	0	934
8:00 AM	TOTAL	618		0.00%		TOTAL	934		0.00%	

Direction EASTBOUND East-West Road Westbound Offramp Direction WESTBOUND

Start Time	Direction EASTBOUND					Direction WESTBOUND				
	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
6:15 AM	0	0	0	0		23	0	31	0	54
6:30 AM	0	0	0	0		25	0	39	0	64
6:45 AM	0	0	0	0		29	0	44	0	73
7:00 AM	0	0	0	0		35	0	36	0	71
7:15 AM	0	0	0	0		48	1	36	0	85
7:30 AM	0	0	0	0		36	0	54	0	90
7:45 AM	0	0	0	0		39	0	85	0	124
8:00 AM	0	0	0	0		42	0	81	0	123

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	0	0	0	0	0	158	1	211	0	370
8:00 AM	TOTAL	0		#DIV/0!		TOTAL	370		0.00%	

AM EB Offramp-Paiwa St.

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
6:15 AM	76	23			99	49	64			113
6:30 AM	91	30			121	63	79			142
6:45 AM	80	47			127	68	79			147
7:00 AM	98	55			151	68	110			178
7:15 AM	100	54			154	65	111			176
7:30 AM	110	52			162	64	90			154
7:45 AM	87	52			139	51	84			135
8:00 AM	81	39			120	52	75			127

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
7:00 AM	0	393	213	0	606	248	395	0	0	643
8:00 AM	TOTAL	606		0.00%		TOTAL	643		0.00%	

Direction EASTBOUND East-West Road Eastbound Offramp Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
6:15 AM	67	8	89		164					
6:30 AM	74	3	72		149					
6:45 AM	71	0	71		142					
7:00 AM	66	1	64		131					
7:15 AM	56	1	75		132					
7:30 AM	43	1	86		130					
7:45 AM	60	1	81		142					
8:00 AM	63	0	54		117					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
7:00 AM	225	4	306	0	535	0	0	0	0	0
8:00 AM	TOTAL	535		0.00%		TOTAL	0		#DIV/0!	

PM Ka Uka-Kam Hwy

Project : 78.0 Waiola Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:30 PM	170	10	2		182	39	107			146
4:45 PM	195	11	0		206	62	145			207
5:00 PM	182	15	3		200	64	137			198
5:15 PM	193	12	1		206	68	173			241
5:30 PM	167	5	1		173	80	148			228
5:45 PM	143	22	3		168	65	112			177

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	0	685	54	8	747	277	570	0	12	859
6:00 PM	TOTAL	739		1.08%		TOTAL	647		1.42%	

Direction EASTBOUND East-West Road Ka Uka Blvd Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:30 PM						22		148	0	170
4:45 PM						25		182	0	207
5:00 PM						17		205	0	222
5:15 PM						25		189	0	214
5:30 PM						26		194	1	221
5:45 PM						25		203	0	228

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	0	0	0	0	0	93	0	801	1	895
6:00 PM	TOTAL	0		#DIV/0!		TOTAL	894		0.11%	

PM Ka Uka-Ukec

PM Waipio Uka-Kam Hwy

Project : 78.0 Waiala Sports Complex
Date: 12/4/97

Project : 78.0 Waiala Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				North-South Road Ukec Street				Direction SOUTHBOUND			
	NB-LT	NB-TH	NB-RT	T/B	SB-LT	SB-TH	SB-RT	T/B				
4:30 PM	24	6	51		1	5	18					
4:45 PM	24	7	30		2	8	7					
5:00 PM	27	6	40		4	7	20					
5:15 PM	30	6	27		1	4	13					
5:30 PM	18	9	24		0	6	6					
5:45 PM	21	5	39		1	5	12					

Start Time	Direction NORTHBOUND				North-South Road Kamehameha Hwy				Direction SOUTHBOUND			
	NB-LT	NB-TH	NB-RT	T/B	SB-LT	SB-TH	SB-RT	T/B				
4:30 PM		171	146	0	6	123		2				
4:45 PM		197	195	0	7	163		2				
5:00 PM		183	167	1	5	149		6				
5:15 PM		200	166	0	10	188		4				
5:30 PM		161	189	0	7	167		1				
5:45 PM		151	182	2	6	131		1				

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	SB-LT	SB-TH	SB-RT	T/B
5:00 PM	98	26	130	0	6	22	51	0
6:00 PM	TOTAL	252		0.00%	TOTAL	79		0.00%

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	SB-LT	SB-TH	SB-RT	T/B
5:00 PM	0	695	704	3	28	635	0	12
6:00 PM	TOTAL	1399		0.21%	TOTAL	663		1.81%

Start Time	Direction EASTBOUND				East-West Road Ka Uka Blvd				Direction WESTBOUND			
	EB-LT	EB-TH	EB-RT	T/B	WB-LT	WB-TH	WB-RT	T/B				
4:30 PM	10	25	13		48	130	3					
4:45 PM	15	54	9		47	176	1					
5:00 PM	13	55	18		47	175	2					
5:15 PM	8	59	12		48	181	0					
5:30 PM	9	76	8		32	196	1					
5:45 PM	19	56	13		51	195	1					

Start Time	Direction EASTBOUND				East-West Road Waipio Uka				Direction WESTBOUND			
	EB-LT	EB-TH	EB-RT	T/B	WB-LT	WB-TH	WB-RT	T/B				
4:30 PM					114		9	2				
4:45 PM					100		9	0				
5:00 PM					109		14	2				
5:15 PM					121		5	2				
5:30 PM					125		11	0				
5:45 PM					128		14	2				

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	WB-LT	WB-TH	WB-RT	T/B
5:00 PM	49	245	49	0	176	747	4	0
6:00 PM	TOTAL	343		0.00%	TOTAL	927		0.00%

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	WB-LT	WB-TH	WB-RT	T/B
5:00 PM	0	0	0	0	483	0	44	6
6:00 PM	TOTAL	0		#DIV/0!	TOTAL	527		1.14%

PM Lumiaina-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM	42	284	28		354	5	166	118		289
4:30 PM	32	266	24		322	17	148	101		266
4:45 PM	49	273	30		352	4	125	96		225
5:00 PM	46	276	33		355	5	138	100		243
5:15 PM	49	298	18		365	2	141	117		260
5:30 PM	73	232	28		333	4	147	108		259
5:45 PM	50	285	21		356	4	127	113		244
6:00 PM	44	269	23		336	4	185	104		293

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	218	1091	100	0	1409	15	553	438	0	1006
6:00 PM	TOTAL	1409		0.00%		TOTAL	1006		0.00%	

Direction EASTBOUND East-West Road Lumiaina Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM	101	9	55		165	7	12	2		21
4:30 PM	81	7	54		142	6	14	8		28
4:45 PM	88	11	46		145	14	18	6		38
5:00 PM	86	5	59		150	8	15	6		29
5:15 PM	111	12	59		182	14	10	6		30
5:30 PM	110	9	48		167	15	10	5		30
5:45 PM	102	15	53		170	21	13	6		40
6:00 PM	100	12	50		162	6	15	1		22

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	409	41	219	0	669	58	48	23	0	129
6:00 PM	TOTAL	669		0.00%		TOTAL	129		0.00%	

PM Lumiauu-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM	34	349	24		407	0	226	2		228
4:30 PM	35	318	30		383	0	204	4		208
4:45 PM	45	349	43		437	1	181	3		185
5:00 PM	33	353	30		416	1	201	3		205
5:15 PM	40	363	42		445	2	208	6		214
5:30 PM	41	331	33		405	3	204	3		210
5:45 PM	49	355	39		443	0	200	1		201
6:00 PM	47	333	29		409	0	241	0		241

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	163	1402	144	0	1709	6	811	13	0	830
6:00 PM	TOTAL	1709		0.00%		TOTAL	830		0.00%	

Direction EASTBOUND East-West Road Lumiauu Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM	4	4	14		22	23	1	1		25
4:30 PM	3	1	17		21	17	0	1		18
4:45 PM	1	0	23		24	19	3	2		24
5:00 PM	1	0	15		16	26	4	1		31
5:15 PM	1	1	12		14	20	0	1		21
5:30 PM	1	0	2		3	18	3	1		22
5:45 PM	1	4	24		29	22	0	0		22
6:00 PM	3	0	17		20	18	2	0		18

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	4	5	53	0	62	86	7	3	0	96
6:00 PM	TOTAL	62		0.00%		TOTAL	96		0.00%	

PM Waipahu-Kam Hwy

Project : 78.2 Waiala Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM	80	383			443		225	38		263
4:30 PM	70	325			395		188	50		238
4:45 PM	70	379			449		188	37		223
5:00 PM	69	380			429		197	45		242
5:15 PM	77	408			485		201	37		238
5:30 PM	78	388			444		189	35		224
5:45 PM	85	387			452		200	46		246
6:00 PM	69	388			437		230	44		274

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	287	1523	0	0	1810	0	787	163	0	950
6:00 PM	TOTAL	1010		0.00%		TOTAL	950		0.00%	

Direction EASTBOUND East-West Road Waipahu Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM	44		108		150					
4:30 PM	58		127		185					
4:45 PM	58		98		156					
5:00 PM	56		129		185					
5:15 PM	37		122		159					
5:30 PM	37		93		130					
5:45 PM	56		108		162					
6:00 PM	41		118		159					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	188	0	450	0	638	0	0	0	0	0
6:00 PM	TOTAL	638		0.00%		TOTAL	0		#DIV/0!	

PM Lumiania-Palwa

Project : 78.0 Waiala Sports Complex
Date: 2/12/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM	35	28	96	3		5	14	0	1	
4:30 PM	31	26	98	0		11	16	0	1	
4:45 PM	49	24	91	3		14	11	0	0	
5:00 PM	34	27	94	0		2	12	1	1	
5:15 PM	50	28	92	1		7	14	0	0	
5:30 PM	27	18	104	2		7	22	0	0	
5:45 PM	27	19	88	0		8	26	0	0	
6:00 PM	35	28	78	0		14	32	0	0	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	138	92	378	3	0	24	74	1	1	0
6:00 PM	TOTAL	608		0.49%		TOTAL	99		1.01%	

Direction EASTBOUND East-West Road Lumiania Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM	0	5	20	0		252	10	2	2	
4:30 PM	1	6	9	0		224	11	8	3	
4:45 PM	3	12	17	0		197	22	13	1	
5:00 PM	1	13	17	0		218	10	14	1	
5:15 PM	1	12	24	0		188	9	9	1	
5:30 PM	0	13	12	0		188	10	1	3	
5:45 PM	2	6	15	0		179	8	8	0	
6:00 PM	0	16	17	0		216	22	5	1	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	4	44	68	0	0	773	37	30	5	0
6:00 PM	TOTAL	116		0.00%		TOTAL	840		0.60%	

PM WB Offramp-Paiwa St.

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM					0					0
4:30 PM	46	164			210		126	133		259
4:45 PM	49	145			194		145	146		291
5:00 PM	51	148			197		151	131		282
5:15 PM	50	163			213		118	159		275
5:30 PM	51	149			200		112	174		286
5:45 PM	52	155			207		118	104		222
6:00 PM	55	146			201		124	125		249

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	204	613	0	0	817	0	497	568	0	1065
6:00 PM	TOTAL	817		0.00%		TOTAL	1065		0.00%	

Direction EASTBOUND East-West Road Westbound Offramp Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM										0
4:30 PM						117	1	147		265
4:45 PM						98	0	137		235
5:00 PM						75	0	147		222
5:15 PM						100	1	135		236
5:30 PM						86	0	141		227
5:45 PM						95	1	159		255
6:00 PM						88	0	159		247

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	0	0	0	0	0	356	2	582	0	940
6:00 PM	TOTAL	0		#DIV/0!		TOTAL	940		0.00%	

PM EB Offramp-Paiwa St.

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
4:15 PM					0					0
4:30 PM		119	43		162	62	181			243
4:45 PM		121	47		168	78	165			243
5:00 PM		112	39		151	84	142			226
5:15 PM		120	32		152	59	157			216
5:30 PM		107	29		136	57	141			198
5:45 PM		114	34		148	53	160			213
6:00 PM		117	22		139	64	148			212

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
5:00 PM	0	453	134	0	587	253	600	0	0	853
6:00 PM	TOTAL	587		0.00%		TOTAL	853		0.00%	

Direction EASTBOUND East-West Road Eastbound Offramp Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
4:15 PM					0					
4:30 PM	91	0	66		157					
4:45 PM	73	1	51		125					
5:00 PM	85	0	53		138					
5:15 PM	93	0	62		155					
5:30 PM	93	0	52		145					
5:45 PM	93	0	67		160					
6:00 PM	84	0	64		148					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
5:00 PM	364	0	234	0	598	0	0	0	0	0
6:00 PM	TOTAL	598		0.00%		TOTAL	0		#DIV/0!	

SAT Ka Uka-Kam Hwy

Project : 78.0 Waiola Sports Complex
Date: 12/4/97

Direction North-South Road Direction
NORTHBOUND Kamehameha Hwy SOUTHBOUND

Start Time	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
10:30 AM		142	21	3		82	218		1	
10:45 AM		140	24	2		90	217		0	
11:00 AM		128	29	2		88	206		2	
11:15 AM		134	13	2		82	181		1	
11:30 AM		158	28	0		91	200		1	
11:45 AM		152	32	1		71	181		0	
12:00 PM		153	25	2		55	191		1	
12:15 PM		170	18	2		76	175		3	
12:30 PM		140	48	0		78	191		1	
12:45 PM		173	24	0		83	160		1	
1:00 PM		142	36	0		75	153		3	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	0	631	101	5	0	293	747	0	5	0
12:30 PM	TOTAL	732		0.68%		TOTAL	1040		0.48%	

Direction East-West Road Direction
EASTBOUND Ka Uka Blvd WESTBOUND

Start Time	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
10:30 AM						28		89	2	
10:45 AM						33		79	1	
11:00 AM						24		95	0	
11:15 AM						29		84	0	
11:30 AM						35		88	1	
11:45 AM						36		92	3	
12:00 PM						27		100	1	
12:15 PM						22		111	0	
12:30 PM						30		111	0	
12:45 PM						20		105	0	
1:00 PM						35		112	0	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	0	0	0	0	0	120	0	391	5	0
12:30 PM	TOTAL	0		#DIV/0!		TOTAL	511		0.98%	

SAT Ka Uka-Ukec

Project : 78.0 Waiola Sports Complex
Date: 12/4/97

Direction North-South Road Direction
NORTHBOUND Ukec Street SOUTHBOUND

Start Time	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
10:30 AM	12	10	31			3	7	5		
10:45 AM	17	9	37			1	4	11		
11:00 AM	14	4	22			0	5	11		
11:15 AM	15	5	32			2	3	11		
11:30 AM	27	5	31			3	16	14		
11:45 AM	18	6	25			1	3	13		
12:00 PM	24	3	19			3	12	9		
12:15 PM	17	5	20			4	1	8		
12:30 PM	18	2	24			4	4	19		
12:45 PM	24	5	14			1	9	19		
1:00 PM	17	3	27			1	1	13		

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	84	19	95	0	0	11	32	44	0	0
12:30 PM	TOTAL	198		0.00%		TOTAL	87		0.00%	

Direction East-West Road Direction
EASTBOUND Ka Uka Blvd WESTBOUND

Start Time	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
10:30 AM	11	80	9			30	80	5		
10:45 AM	17	82	15			32	84	6		
11:00 AM	17	72	13			15	94	0		
11:15 AM	17	68	13			27	87	2		
11:30 AM	13	82	20			36	82	2		
11:45 AM	26	70	10			21	99	2		
12:00 PM	16	52	7			20	94	1		
12:15 PM	15	61	15			26	108	4		
12:30 PM	21	100	9			45	104	2		
12:45 PM	15	64	15			29	82	3		
1:00 PM	12	72	13			24	117	4		

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	70	265	52	0	0	103	383	9	0	0
12:30 PM	TOTAL	387		0.00%		TOTAL	495		0.00%	

SAT Waipio Uka-Kam Hwy

Project : 78.0 Waiala Sports Complex
Date: 12/4/97

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
10:30 AM		146	112	5		14	232		1	
10:45 AM		154	113	4		7	243		0	
11:00 AM		144	120	4		9	221		2	
11:15 AM		137	115	4		5	205		1	
11:30 AM		168	152	2		6	229		1	
11:45 AM		161	143	3		13	204		0	
12:00 PM		166	131	3		7	211		1	
12:15 PM		174	131	2		11	186		3	
12:30 PM		178	149	0		4	217		1	
12:45 PM		183	150	0		7	173		1	
1:00 PM		168	159	0		3	185		3	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total						
11:30 AM	0	669	557	10	0	37	830	0	5	0						
12:30 PM	TOTAL					1226	0.82%									
						TOTAL					867	0.58%				

Direction EASTBOUND East-West Road Waipio Uka Blvd Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
10:30 AM						107		17	1	
10:45 AM						134		10	1	
11:00 AM						119		13	1	
11:15 AM						118		10	3	
11:30 AM						131		16	0	
11:45 AM						120		23	1	
12:00 PM						125		12	0	
12:15 PM						94		12	1	
12:30 PM						98		10	1	
12:45 PM						115		14	0	
1:00 PM						107		12	0	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total						
11:30 AM	0	0	0	0	0	470	0	63	2	0						
12:30 PM	TOTAL					0	#DIV/0!									
						TOTAL					533	0.38%				

SAT Lumialna-Kam Hwy

Project : 78.2 Waiala Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	38	216	13		267	5	222	140		367
11:15 AM	37	187	22		246	3	228	142		373
11:30 AM	37	204	13		254	3	208	121		332
11:45 AM	38	198	15		251	3	193	111		307
12:00 PM	50	196	10		256	4	209	120		333
12:15 PM	44	234	27		305	3	219	142		364
12:30 PM	48	223	16		287	4	220	158		382
12:45 PM	52	231	21		304	7	199	119		325

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total						
11:30 AM	169	832	65	0	1066	13	829	494	0	1336						
12:30 PM	TOTAL					1066	0.00%									
						TOTAL					1336	0.00%				

Direction EASTBOUND East-West Road Lumialna Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM	107	5	107		219	20	10	7		37
11:15 AM	91	7	116		214	9	12	6		27
11:30 AM	99	5	97		201	13	12	8		33
11:45 AM	98	11	96		205	8	11	4		23
12:00 PM	95	10	107		212	13	11	8		32
12:15 PM	112	8	101		221	12	11	8		31
12:30 PM	110	8	107		225	22	13	3		38
12:45 PM	105	10	124		239	19	12	9		40

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total						
11:30 AM	404	34	401	0	839	46	45	28	0	119						
12:30 PM	TOTAL					839	0.00%									
						TOTAL					119	0.00%				

SAT Lumlauau-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	25	265	21		311	0	341	8		349
11:15 AM	26	238	19		283	0	345	8		353
11:30 AM	20	251	19		290	1	310	7		318
11:45 AM	28	239	21		288	3	290	4		297
12:00 PM	25	251	20		296	1	320	8		329
12:15 PM	18	299	22		337	2	320	10		332
12:30 PM	35	277	14		326	1	344	4		349
12:45 PM	37	298	19		354	2	335	5		342

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PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	89	1040	82	0	1211	7	1240	29	0	1276
12:30 PM	TOTAL	1211		0.00%		TOTAL	1276		0.00%	

Direction EASTBOUND East-West Road Lumlauau Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM	1	3	31		35	25	2	1		28
11:15 AM	6	1	25		32	13	1	2		16
11:30 AM	3	1	18		22	18	1	0		19
11:45 AM	10	1	24		35	24	2	2		28
12:00 PM	4	0	25		29	21	2	1		24
12:15 PM	3	3	22		28	22	2	3		27
12:30 PM	9	2	22		33	14	1	1		16
12:45 PM	2	1	20		23	9	3	4		16

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	20	5	89	0	114	85	7	6	0	98
12:30 PM	TOTAL	114		0.00%		TOTAL	98		0.00%	

SAT Waipahu-Kam Hwy

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	44	247			291		334	63		397
11:15 AM	48	239			287		336	47		383
11:30 AM	37	256			293		302	44		346
11:45 AM	50	262			312		296	42		338
12:00 PM	34	260			294		323	43		366
12:15 PM	38	286			322		313	51		364
12:30 PM	59	289			348		340	40		380
12:45 PM	69	327			396		324	40		364

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	157	1064	0	0	1221	0	1234	180	0	1414
12:30 PM	TOTAL	1221		0.00%		TOTAL	1414		0.00%	

Direction EASTBOUND East-West Road Waipahu Street Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM	64		127		191					
11:15 AM	44		139		183					
11:30 AM	34		122		156					
11:45 AM	26		113		139					
12:00 PM	36		123		159					
12:15 PM	51		113		164					
12:30 PM	37		115		152					
12:45 PM	27		118		145					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	147	0	471	0	618	0	0	0	0	0
12:30 PM	TOTAL	618		0.00%		TOTAL	0		#DIV/0!	

SAT Lumlania-Palwa

Project : 78.0 Walola Sports Complex
Date: 2/7/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	24	16	124	4		7	17	0	0	
11:15 AM	25	24	137	2		12	16	4	0	
11:30 AM	18	29	130	1		12	15	1	0	
11:45 AM	20	21	129	1		4	15	1	0	
12:00 PM	19	21	122	0		6	12	3	0	
12:15 PM	22	37	118	2		7	18	1	0	
12:30 PM	14	28	126	1		10	16	1	0	
12:45 PM	24	20	95	0		6	19	0	0	

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	79	108	499	4	0	29	60	6	0	0
12:30 PM	TOTAL	686		0.58%		TOTAL	95		0.00%	

Direction EASTBOUND East-West Road Lumlania Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM	0	10	23	0		236	6	10	3	
11:15 AM	4	6	25	0		203	9	11	1	
11:30 AM	0	12	24	0		250	8	14	2	
11:45 AM	2	11	27	0		255	11	12	0	
12:00 PM	0	8	24	0		274	8	9	2	
12:15 PM	0	8	15	0		251	9	6	6	
12:30 PM	0	10	19	0		268	6	15	4	
12:45 PM	0	6	14	0		266	16	6	2	

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	2	39	90	0	0	1030	36	41	10	0
12:30 PM	TOTAL	131		0.00%		TOTAL	1107		0.90%	

SAT WB Offramp-Palwa St.

Project : 78.2 Walola Sports Complex
Date: 5/20/98

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	34	174			208		167	120		287
11:15 AM	53	185			238		168	133		301
11:30 AM	28	164			190		151	141		292
11:45 AM	48	171			219		160	128		288
12:00 PM	40	171			211		164	124		288
12:15 PM	48	177			223		153	119		272
12:30 PM	49	181			230		199	138		335
12:45 PM	42	177			219		158	164		322

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	160	683	0	0	843	0	628	512	0	1140
12:30 PM	TOTAL	843		0.00%		TOTAL	1140		0.00%	

Direction EASTBOUND East-West Road Westbound Offramp Direction WESTBOUND

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM						50	0	226		276
11:15 AM						46	0	198		242
11:30 AM						44	1	205		250
11:45 AM						42	0	224		266
12:00 PM						61	1	194		258
12:15 PM						50	1	171		222
12:30 PM						56	0	199		255
12:45 PM						52	0	221		273

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	0	0	0	0	0	197	3	794	0	994
12:30 PM	TOTAL	0		#DIV/0!		TOTAL	994		0.00%	

SAT EB Offramp-Paiwa St.

APPENDIX B

Project : 78.2 Waiola Sports Complex
Date: 5/20/98

DERIVATION OF TRIPS

FOR

WAIOLA REGIONAL PARK AND SPORTS COMPLEX

Start Time	Direction NORTHBOUND				Total	Direction SOUTHBOUND				Total
	NB-LT	NB-TH	NB-RT	T/B		SB-LT	SB-TH	SB-RT	T/B	
11:00 AM	107	57			164	110	107			217
11:15 AM	128	38			166	82	132			214
11:30 AM	73	41			114	112	83			195
11:45 AM	113	37			150	99	103			202
12:00 PM	98	49			145	107	118			225
12:15 PM	112	38			148	97	106			203
12:30 PM	127	38			163	96	159			255
12:45 PM	115	54			169	98	112			210

PEAK HOUR	NB-LT	NB-TH	NB-RT	T/B	Total	SB-LT	SB-TH	SB-RT	T/B	Total
11:30 AM	0	394	163	0	557	415	410	0	0	825
12:30 PM	TOTAL	557		0.00%		TOTAL	825		0.00%	

Start Time	Direction EASTBOUND				Total	Direction WESTBOUND				Total
	EB-LT	EB-TH	EB-RT	T/B		WB-LT	WB-TH	WB-RT	T/B	
11:00 AM	101	2	46		149					
11:15 AM	110	0	39		149					
11:30 AM	117	0	44		161					
11:45 AM	108	1	55		162					
12:00 PM	115	3	43		161					
12:15 PM	111	4	32		147					
12:30 PM	103	0	56		159					
12:45 PM	104	0	46		150					

PEAK HOUR	EB-LT	EB-TH	EB-RT	T/B	Total	WB-LT	WB-TH	WB-RT	T/B	Total
11:30 AM	449	8	174	0	631	0	0	0	0	0
12:30 PM	TOTAL	631		0.00%		TOTAL	0		#DIV/0!	

DERIVATION OF TRIPS

Trips generated by the Waiola Regional Park and Sports Complex were estimated using the project land uses. Trip rates from the ITE Trip Generation Report¹ were used where possible.

Standard ITE trip rates were used for the tennis complex based upon 24 courts and the community/aquatic center based on 43,560 ft² of gross floor area. Table B-1 shows the results.

Land Use (parameter)	A.M. Peak Hr.		P.M. Peak Hr		Sat Peak Hr	
	Enter	Exit	Enter	Exit	Enter	Exit
Tennis Complex	28	14	33	64	37	38
Community/Aquatic Center	38	20	26	50	27	28

Trips generated by the 4,000 seat baseball stadium, basketball/volleyball courts, multi-purpose fields, skateboard park, passive park and botanical gardens were assumed to be similar to the University of Hawaii, Lower Campus Sport Facilities. These facilities include Rainbow Stadium which has a seating capacity of 4,332, tennis courts, softball field, multi-purpose fields, football fields, basketball and volleyball courts, a swimming pool and the Stan Sheriff Center. Trip data at the University of Hawaii was collected on Friday, January 30, 1998 and Saturday, January 31, 1998 at the University of Hawaii, Lower Campus Parking Structure during the estimated weekday afternoon and weekend mid-day peak periods of the proposed project. Counts were not taken during the weekday morning peak hour since usage by University of Hawaii students going to class would not provide valid data.

¹ Trip Generation Report, by the Institute of Transportation Engineers, Sixth Edition, 1997.

Major activities on Friday, January 30, 1998 during the afternoon peak hour of 5:30 PM - 6:30 PM included the U.H. Women Water Polo alumnae game, U.H. Baseball v.s. U.C.L.A. (gate attendance: 1,582), U.H. Women Softball practice and the N.F.L Pro-bowl Cheerleader practice.

Major activities on Saturday, January 31, 1998 during the mid-day peak hour of 12:30 PM - 1:30 PM included U.H. Baseball v.s. U.C.L.A. (gate attendance: 1,269), Semi-pro Football No Fear Hawaii Volcano Bowl, Australia Bushrangers vs Team Hawaii All-Stars, Pop Warner Football exhibition and three high school basketball games.

Table B-2 summarizes the data.

Land Use	P.M. Peak Hr.		Sat Peak Hr.	
	Enter	Exit	Enter	Exit
Lower Campus Parking Structure	498	298	464	65

For land uses where trip rates are not directly available from ITE, the following methodology was used:

- Estimate the number of participants and spectators based on information provided from the Mayor's Public Private Task Force - Waiola Sports Complex.
- Assume an average vehicle occupancy rate of two (2) persons per vehicle.
- Estimate enter/exit distribution based upon similar facilities listed in the ITE Trip Generation Report.

- Assume trips during the weekday morning peak hour consist only of park employees (maintenance workers, etc.). Project activities are not expected to be occurring during this hour. Assume 50 employees with all 50 employees using a single occupant vehicle.

The following is a description of the assumptions used and corresponding trips generated by the project land uses.

Baseball Fields (6 Fields): Assume 18 players per team and 50% attendance using 6 baseball fields with 100 seat bleachers per field. Therefore, the expected number of participants is 516 ((36 players + 50 spectators) x 6 fields). Assuming an average vehicle occupancy of 2 persons per vehicle results in approximately 258 trips.

Youth Baseball Fields (4 Fields): Derivation similar to Baseball Fields.

Softball Fields (4 Fields): Derivation similar to Baseball Fields.

Soccer Fields (2 Fields): Derivation similar to Baseball Fields.

In-Line Hockey Facility: Assume 15 players per team and an attendance of 25 spectators using 4 hockey rinks. Therefore, the expected number of participants is 220 ((30 players + 25 spectators) x 4 fields). Assuming an average vehicle occupancy of 2 persons per vehicle results in approximately 110 trips generated.

Boxcar Stadium and Track: For weekend event. Assume 75 players with an attendance of 300 spectators. Therefore, the number of persons is 375 ((75

players + 300 spectators) x 1 stadium)). Assuming an average vehicle occupancy of 2 persons per vehicle results in 188 trips. For daily practice and "fun" competition, an estimated 50 people are expected.

Table B-3 summarizes the trips generated by the Waiola Regional Park and Sports Complex.

Land Use (parameter)	A.M. Peak Hr.		P.M. Peak Hr.		Sat. Peak Hr.	
	Enter	Exit	Enter	Exit	Enter	Exit
Tennis Complex	28	14	33	64	37	38
Community / Aquatic Ctr.	38	20	26	50	27	28
Baseball stadium, basketball and volleyball courts, multi purpose fields, skateboard park, passive park and botanical gardens	43	7	498	298	464	65
Baseball Fields	0	0	173	85	173	85
Youth Baseball Fields	0	0	57	115	57	115
Softball Fields	0	0	115	57	115	57
Soccer Fields	0	0	18	37	18	37
In-Line Hockey	0	0	40	82	40	82
Boxcar Stadium & Track	0	0	33	17	124	64
Sub-Total	109	41	993	805	1055	571
Total	150		1797		1626	

APPENDIX C

LEVEL-OF-SERVICE DEFINITIONS
 FOR
 SIGNALIZED INTERSECTIONS
 AND
 UNSIGNALIZED INTERSECTIONS

LEVEL-OF-SERVICE FOR SIGNALIZED INTERSECTIONS

Level-of-service for signalized intersections is defined in terms of *delay*. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period. The table to the right gives the Level-of-Service criteria.

Level of Service	Stopped Delay Per Vehicle (sec/veh)
A	≤ 5
B	> 5 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 40
E	< 40 and ≤ 60
F	> 60

Level-of-service A describes operations with very low delay up to 5.0 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level-of-service B describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths or both. More vehicles stop than for LOS A, causing higher levels of average delay.

Level-of-service C describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level-of-service D describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or a high v/c ratios (volume of cars to capacity of intersection). Individual cycle failures are noticeable.

Level-of-service E describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level-of-service F describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

LEVEL-OF-SERVICE FOR UNSIGNALIZED INTERSECTIONS

The level of service criteria are given in the table to the right. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position.

Level of Service	Average Total Delay (sec/veh)
A	≤ 5
B	> 5 and ≤ 10
C	> 10 and ≤ 20
D	> 20 and ≤ 30
E	< 30 and ≤ 45
F	> 45

The proposed level of service criteria are somewhat different from the criteria for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

APPENDIX D

LEVEL-OF-SERVICE RESULTS

Weekday Morning Peak Hour Level-of-Service Results

Table D.1 - Kamehameha Highway with Ka Uka Boulevard			
Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (38)
Northbound TH on Kam Hwy	D (33)	C (25)	D (26)
Northbound RT on Kam Hwy	n/a	C (22)	C (23)
Southbound LT on Kam Hwy	E (52)	D (25)	D (26)
Southbound TH on Kam Hwy	B (8)	A (4)	B (8)
Southbound RT on Kam Hwy	n/a	n/a	A (4)
Eastbound LT on Ka Uka Blvd	n/a	n/a	D (36)
Eastbound TH/RT on Ka Uka Blvd	n/a	n/a	D (36)
Westbound LT on Ka Uka Blvd	D (33)	D (25)	D (30)
Westbound TH on Ka Uka Blvd	n/a	n/a	D (28)
Westbound RT on Ka Uka Blvd	D (32)	D (25)	D (32)
Overall	D (29)	C (18)	C (19)

Table D.2 - Ka Uka Boulevard with Ukee Street			
Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT/TH on Ukee St	C (22)	C (22)	C (22)
Northbound RT on Ukee St	D (29)	D (29)	D (29)
Southbound LT/TH on Ukee St	C (20)	C (20)	C (20)
Southbound RT on Ukee St	C (20)	C (20)	C (20)
Eastbound LT on Ka Uka Blvd	D (27)	D (27)	D (27)
Eastbound TH/RT on Ka Uka Blvd	B (8)	B (8)	B (8)
Westbound LT on Ka Uka Blvd	C (20)	C (20)	C (20)
Westbound TH/RT on Ka Uka Blvd	A (4)	A (4)	A (4)
Overall	B (12)	B (12)	B (12)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (36)
Northbound TH on Kam Hwy	B (7)	B (7)	B (11)
Northbound RT on Kam Hwy	B (8)	B (8)	B (10)
Southbound LT on Kam Hwy	D (27)	D (27)	D (33)
Southbound TH on Kam Hwy	B (8)	B (7)	B (13)
Southbound RT on Kam Hwy	n/a	n/a	B (9)
Eastbound LT on Waipio Uka St	n/a	n/a	D (36)
Eastbound TH on Waipio Uka St	n/a	n/a	D (36)
Eastbound RT on Waipio Uka St	n/a	n/a	D (36)
Westbound LT on Waipio Uka St	C (17)	C (17)	C (25)
Westbound TH on Waipio Uka St	n/a	n/a	C (21)
Westbound RT on Waipio Uka St	B (15)	B (15)	C (21)
Overall	B (9)	B (9)	C (16)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	E (40)	E (41)	E (41)
Northbound TH on Kam Hwy	B (8)	B (8)	B (8)
Northbound RT on Kam Hwy	B (8)	B (7)	B (7)
Southbound LT on Kam Hwy	D (34)	D (34)	D (34)
Southbound TH on Kam Hwy	B (9)	B (10)	B (11)
Southbound RT on Kam Hwy	B (8)	B (10)	B (10)
Eastbound LT /TH on Lumiala St	F (>60)	F (>60)	F (>60)
Eastbound RT on Lumiala St	C (21)	C (23)	C (23)
Westbound LT on Lumiala St	C (21)	C (21)	C (21)
Westbound TH/RT Lumiala St	C (21)	C (21)	C (21)
Overall	C (21)	C (21)	C (21)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	D (32)	D (32)	D (32)
Northbound TH on Kam Hwy	A (4)	A (4)	A (4)
Northbound RT on Kam Hwy	A (3)	A (3)	A (3)
Southbound LT on Kam Hwy	D (34)	D (34)	D (34)
Southbound TH on Kam Hwy	B (6)	B (6)	B (6)
Southbound RT on Kam Hwy	A (4)	A (4)	A (4)
Eastbound LT /TH on Lumiauau St	D (28)	D (28)	D (28)
Eastbound RT on Lumiauau St	E (48)	E (48)	E (48)
Westbound LT on Lumiauau St	E (44)	E (45)	E (45)
Westbound TH/RT Lumiauau St	D (28)	D (28)	D (28)
Overall	B (13)	B (13)	B (13)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	C (20)	D (27)	D (27)
Northbound TH on Kam Hwy	A (4)	A (5)	A (5)
Southbound TH on Kam Hwy	C (21)	C (24)	C (24)
Southbound RT on Kam Hwy	B (11)	B (11)	B (11)
Eastbound LT on Waipahu St	C (21)	C (24)	C (24)
Eastbound RT on Waipahu St	F (>60)	F (>60)	F (>60)
Overall	D (27)	D (29)	D (29)

Weekday Afternoon Peak Hour Level-of-Service Results

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa St	D (35)	D (37)	D (37)
Northbound TH/RT on Palwa St	C (22)	C (22)	C (22)
Southbound LT on Palwa St	D (29)	D (29)	D (29)
Southbound TH/RT on Palwa St	C (22)	C (23)	C (23)
Eastbound LT on Lumialna St	C (24)	C (24)	C (24)
Eastbound TH/RT on Lumialna St	D (27)	D (28)	D (28)
Westbound LT/TH on Lumialna St	B (10)	B (11)	B (11)
Westbound TH/RT on Lumialna St	B (7)	B (8)	B (8)
Overall	C (15)	C (17)	C (17)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa Street	C (17)	C (17)	C (17)
Northbound TH on Palwa Street	A (3)	A (3)	A (3)
Southbound TH on Palwa Street	B (8)	B (8)	B (8)
Westbound LT/TH from Off-Ramp	C (16)	C (16)	C (16)
Overall	B (9)	B (9)	B (9)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound TH/RT on Palwa Street	C (15)	C (16)	C (16)
Southbound LT on Palwa Street	C (22)	C (24)	D (25)
Southbound TH on Palwa Street	B (6)	B (6)	B (6)
Eastbound LT/TH from Off-Ramp	C (16)	C (17)	C (17)
Overall	B (14)	B (15)	B (15)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (34)
Northbound TH on Kam Hwy	C (19)	C (16)	C (25)
Northbound RT on Kam Hwy	n/a	B (13)	C (17)
Southbound LT on Kam Hwy	D (32)	D (38)	D (38)
Southbound TH on Kam Hwy	A (4)	A (5)	B (13)
Southbound RT on Kam Hwy	n/a	n/a	B (11)
Eastbound LT on Ka Uka Blvd	n/a	n/a	D (39)
Eastbound TH/RT on Ka Uka Blvd	n/a	n/a	D (28)
Westbound LT on Ka Uka Blvd	C (23)	C (23)	D (34)
Westbound TH on Ka Uka Blvd	n/a	n/a	D (28)
Westbound RT on Ka Uka Blvd	F (>60)	D (40)	D (40)
Overall	C (22)	C (19)	D (26)

Movement	Level-Of-Service		
	1998	2005 Without Project	2005 With Project
Northbound LT/TH on Ukee St	C (16)	C (16)	C (24)
Northbound RT on Ukee St	B (14)	B (14)	C (21)
Southbound LT/TH on Ukee St	B (13)	B (14)	C (20)
Southbound RT on Ukee St	B (13)	B (13)	C (20)
Eastbound LT on Ka Uka Blvd	B (14)	B (14)	D (27)
Eastbound TH/RT on Ka Uka Blvd	B (6)	B (6)	B (8)
Westbound LT on Ka Uka Blvd	B (14)	B (14)	C (23)
Westbound TH/RT on Ka Uka Blvd	B (8)	B (10)	B (10)
Overall	B (9)	B (11)	B (12)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (33)
Northbound TH on Kam Hwy	B (8)	B (9)	B (12)
Northbound RT on Kam Hwy	B (8)	B (8)	B (10)
Southbound LT on Kam Hwy	D (31)	D (31)	D (35)
Southbound TH on Kam Hwy	B (6)	B (7)	C (19)
Southbound RT on Kam Hwy	n/a	n/a	B (14)
Eastbound LT on Waipio Uka St	n/a	n/a	D (34)
Eastbound TH on Waipio Uka St	n/a	n/a	D (33)
Eastbound RT on Waipio Uka St	n/a	n/a	D (39)
Westbound LT on Waipio Uka St	C (20)	C (20)	D (34)
Westbound TH on Waipio Uka St	n/a	n/a	D (25)
Westbound RT on Waipio Uka St	C (18)	C (18)	D (25)
Overall	B (11)	B (11)	C (21)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	E (52)	E (52)	E (52)
Northbound TH on Kam Hwy	B (14)	C (15)	C (19)
Northbound RT on Kam Hwy	B (9)	B (10)	B (10)
Southbound LT on Kam Hwy	D (35)	D (35)	D (35)
Southbound TH on Kam Hwy	B (15)	C (19)	C (21)
Southbound RT on Kam Hwy	B (13)	C (16)	C (16)
Eastbound LT /TH on Lumialna St	F (>60)	F (>60)	F (>60)
Eastbound RT on Lumialna St	C (16)	C (16)	C (16)
Westbound LT on Waipio Uka St	C (17)	C (17)	C (17)
Westbound TH/RT Lumialna St	C (17)	C (17)	C (17)
Overall	D (35)	D (36)	D (36)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	D (34)	D (34)	D (34)
Northbound TH on Kam Hwy	A (4)	B (5)	B (7)
Northbound RT on Kam Hwy	A (3)	A (3)	A (3)
Southbound LT on Kam Hwy	D (34)	D (34)	D (34)
Southbound TH on Kam Hwy	B (6)	B (7)	B (7)
Southbound RT on Kam Hwy	A (4)	A (4)	A (4)
Eastbound LT /TH on Lumiauau St	D (30)	D (30)	D (30)
Eastbound RT on Lumiauau St	D (30)	D (30)	D (30)
Westbound LT on Lumiauau St	D (34)	D (34)	D (34)
Westbound TH/RT Lumiauau St	D (30)	D (30)	D (30)
Overall	B (8)	B (9)	B (9)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	C (23)	C (23)	C (23)
Northbound TH on Kam Hwy	B (6)	B (7)	B (11)
Southbound TH on Kam Hwy	B (13)	B (15)	C (19)
Southbound RT on Kam Hwy	B (10)	B (10)	B (11)
Eastbound LT on Waipahu St	C (23)	C (23)	C (23)
Eastbound RT on Waipahu St	C (24)	C (24)	C (24)
Overall	B (12)	B (13)	B (16)

Table D.15 - Palwa Street with Lumiatna Street

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa St	D (29)	D (38)	D (38)
Northbound TH/RT on Palwa St	C (19)	C (19)	C (22)
Southbound LT on Palwa St	D (28)	D (28)	D (29)
Southbound TH/RT on Palwa St	C (22)	C (22)	C (23)
Eastbound LT on Lumiatna St	C (24)	C (24)	C (24)
Eastbound TH/RT on Lumiatna St	D (26)	D (28)	D (29)
Westbound LT/TH on Lumiatna St	B (8)	B (8)	B (9)
Westbound TH/RT on Lumiatna St	B (8)	B (8)	B (7)
Overall	D (33)	D (35)	D (35)

Table D.16 - Palwa Street with H-1 Westbound Off-Ramp

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa Street	C (16)	C (18)	C (18)
Northbound TH on Palwa Street	A (3)	A (3)	A (3)
Southbound TH on Palwa Street	B (8)	B (8)	B (9)
Westbound LT/TH from Off-Ramp	C (17)	C (18)	C (18)
Overall	B (9)	B (9)	B (9)

Table D.17 - Palwa Street with H-1 Eastbound Off-Ramp

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound TH/RT on Palwa Street	B (13)	B (14)	C (18)
Southbound LT on Palwa Street	C (22)	C (27)	D (33)
Southbound TH on Palwa Street	B (5)	B (5)	B (7)
Eastbound LT/TH from Off-Ramp	D (26)	D (30)	D (35)
Overall	B (14)	C (17)	C (17)

Weekend Mid-day Peak Hour Level-of-Service Results

Table D.18 - Kamehameha Highway with Ka Uka Boulevard

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (33)
Northbound TH on Kam Hwy	B (15)	B (13)	C (21)
Northbound RT on Kam Hwy	B (9)	B (11)	C (17)
Southbound LT on Kam Hwy	D (38)	D (29)	D (35)
Southbound TH on Kam Hwy	B (5)	A (3)	B (13)
Southbound RT on Kam Hwy	n/a	n/a	B (10)
Eastbound LT on Ka Uka Blvd	n/a	n/a	D (34)
Eastbound TH/RT on Ka Uka Blvd	n/a	n/a	D (31)
Westbound LT on Ka Uka Blvd	D (29)	D (29)	D (36)
Westbound TH on Ka Uka Blvd	n/a	n/a	D (31)
Westbound RT on Ka Uka Blvd	D (28)	D (31)	D (27)
Overall	C (16)	B (13)	C (23)

Table D.19 - Ka Uka Boulevard with Ukee Street

Movement	Level-Of-Service		
	1998	2005 Without Project	2005 With Project
Northbound LT/TH on Ukee St	C (16)	C (16)	C (16)
Northbound RT on Ukee St	B (14)	B (14)	B (14)
Southbound LT/TH on Ukee St	B (13)	B (14)	B (14)
Southbound RT on Ukee St	B (13)	B (13)	B (13)
Eastbound LT on Ka Uka Blvd	B (14)	B (14)	C (15)
Eastbound TH/RT on Ka Uka Blvd	B (6)	B (7)	B (7)
Westbound LT on Ka Uka Blvd	B (13)	B (13)	B (14)
Westbound TH/RT on Ka Uka Blvd	B (6)	B (6)	B (7)
Overall	B (9)	B (9)	B (9)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	n/a	n/a	D (39)
Northbound TH on Kam Hwy	B (9)	B (9)	B (9)
Northbound RT on Kam Hwy	B (8)	B (8)	B (8)
Southbound LT on Kam Hwy	D (28)	D (31)	D (39)
Southbound TH on Kam Hwy	B (7)	B (7)	B (15)
Southbound RT on Kam Hwy	n/a	n/a	B (10)
Eastbound LT on Waipio Uka St	n/a	n/a	D (34)
Eastbound TH on Waipio Uka St	n/a	n/a	D (35)
Eastbound RT on Waipio Uka St	n/a	n/a	D (38)
Westbound LT on Waipio Uka St	C (18)	C (18)	C (37)
Westbound TH/RT on Waipio Uka St	n/a	n/a	C (28)
Overall	B (11)	B (11)	C (20)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	E (47)	E (47)	E (47)
Northbound TH on Kam Hwy	B (12)	B (13)	C (15)
Northbound RT on Kam Hwy	B (9)	B (9)	B (9)
Southbound LT on Kam Hwy	D (39)	D (39)	D (39)
Southbound TH on Kam Hwy	C (18)	C (21)	C (22)
Southbound RT on Kam Hwy	B (13)	C (15)	C (15)
Eastbound LT /TH on Lumiala St	F (>60)	F (>60)	F (>60)
Eastbound RT on Lumiala St	C (25)	D (26)	D (26)
Westbound LT on Waipio Uka St	C (21)	C (21)	C (21)
Westbound TH/RT Lumiala St	C (21)	C (21)	C (21)
Overall	D (35)	D (36)	D (36)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	D (35)	D (36)	D (36)
Northbound TH on Kam Hwy	A (5)	B (6)	B (6)
Northbound RT on Kam Hwy	A (3)	A (3)	A (3)
Southbound LT on Kam Hwy	D (39)	D (39)	D (39)
Southbound TH on Kam Hwy	B (8)	B (9)	B (9)
Southbound RT on Kam Hwy	A (5)	A (5)	A (5)
Eastbound LT /TH on Lumiauau St	D (33)	D (33)	D (33)
Eastbound RT on Lumiauau St	D (32)	D (32)	D (32)
Westbound LT on Lumiauau St	D (35)	D (35)	D (35)
Westbound TH/RT Lumiauau St	D (33)	D (33)	D (33)
Overall	B (9)	B (9)	B (10)

Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Kam Hwy	C (20)	C (22)	C (22)
Northbound TH on Kam Hwy	B (6)	B (6)	B (6)
Southbound TH on Kam Hwy	C (22)	D (27)	D (33)
Southbound RT on Kam Hwy	B (12)	B (12)	B (12)
Eastbound LT on Waipahu St	C (20)	C (20)	C (23)
Eastbound RT on Waipahu St	D (34)	D (36)	D (39)
Overall	C (17)	C (19)	C (22)

Table D.24 - Palwa Street with Lumialna Street			
Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa St	D (29)	D (29)	D (29)
Northbound TH/RT on Palwa St	C (20)	C (20)	C (22)
Southbound LT on Palwa St	D (31)	D (31)	D (33)
Southbound TH/RT on Palwa St	C (22)	C (22)	C (23)
Eastbound LT on Lumialna St	C (29)	C (29)	C (29)
Eastbound TH/RT on Lumialna St	D (30)	D (30)	D (30)
Westbound LT/TH on Lumialna St	B (12)	B (13)	B (14)
Westbound TH/RT on Lumialna St	B (8)	B (8)	B (8)
Overall	C (16)	C (17)	C (18)

Table D.25 - Palwa Street with H-1 Westbound Off-Ramp			
Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound LT on Palwa Street	D (28)	D (36)	D (36)
Northbound TH on Palwa Street	A (4)	A (4)	A (4)
Southbound TH on Palwa Street	B (6)	B (6)	B (6)
Westbound LT/TH from Off-Ramp	B (14)	B (14)	B (14)
Overall	B (8)	B (9)	B (9)

Table D.26 - Palwa Street with H-1 Eastbound Off-Ramp			
Movement	Level-Of-Service (Delay, sec-vehicle)		
	1998	2005 Without Project	2005 With Project
Northbound TH/RT on Palwa Street	C (19)	C (21)	D (35)
Southbound LT on Palwa Street	D (35)	D (39)	D (38)
Southbound TH on Palwa Street	B (5)	B (7)	B (9)
Eastbound LT/TH from Off-Ramp	D (26)	D (32)	D (38)
Overall	C (21)	C (24)	D (31)

APPENDIX D
ENVIRONMENTAL NOISE ASSESSMENT STUDY



Project No. 98-17

ENVIRONMENTAL NOISE ASSESSMENT STUDY
WAIOLA REGIONAL PARK AND SPORTS COMPLEX
WAIPIO, OAHU, HAWAII

May 8, 1998

Prepared for
PlanPacific, Inc.
Honolulu, Hawaii

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1.0 SUMMARY

- 1.1 The Waiola Regional Park and Sports Complex Development Project consists of approximately 269 acres in the southern portion of the central plateau, which lies between the Koolau and the Waianae mountain ranges in Waipio, Oahu, Hawaii.
- 1.2 Nearby noise sensitive areas include the residential communities of Gentry Waipio and Waikele. Gentry Waipio currently experiences daytime ambient noise levels in the range of 53 to 66 dBA. Waikele currently experiences daytime ambient noise levels in the range of 45 to 49 dBA.
- 1.3 The dominant noise sources during project construction will probably be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities should be relatively short-term, occur only during daytime hours, and must comply with State Department of Health noise regulations.
- 1.4 Noise associated with the proposed baseball stadium could impact the nearest residences in Gentry Waipio and Waikele. Noise from the stadium will occur infrequently and be of short duration. In the surrounding communities, the maximum noise level due to cheering spectators and a sound system will be approximately 3-5 dBA above current ambient noise levels during high occupancy events (>2250 spectators). This increase will be audible but will occur intermittently and only for the duration of an event.
- 1.5 Machinery noise produced from the aquatic center, the community center, the training center, and the field house should not affect the surrounding communities due to their location and distance from residential neighborhoods (>1/4 mile).
- 1.6 Noise associated with grounds keeping and maintenance activities could impact the Waikele residential area. The noise produced by these activities should be equivalent to similar activities currently being performed at the Waikele golf course that surrounds the Waikele residential area.

2.0 PROJECT DESCRIPTION

The Waiola Regional Park and Sports Complex Development Project consists of approximately 269 acres in the southern portion of the central plateau, which lies between the Koolau and the Waianae mountain ranges in Waipio, Oahu, Hawaii. It is bounded by Kamehameha Highway to the east, Kipapa Gulch and the Naval Magazine, Lualualei, Waikele Branch to the west, and the Waikele suburban community to the south, Figure 1. The current development plan will provide a regional park and sports complex equipped with a variety of recreational facilities, including baseball and soccer fields, basketball and volleyball courts, an in-line skating court, a skateboarding bowl, an aquatic center, a training center, a community center, and a field house.

3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

- 3.1 State Department of Health - The State Department of Health (DOH) defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc., and equipment related agricultural, construction, and industrial activities [Reference 1]. These levels are enforced for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 3. DOH also specifies the following with respect to mixed zoning districts.

"For mixed zoning districts, the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level."

- 3.2 City and County of Honolulu Land Use Ordinance - The City's Land Use Ordinance (LUO) specifies maximum allowable levels at the property line [Reference 2]. The LUO criteria differ from those of the DOH in that they use octave band sound levels instead of A-weighted levels and no temporal factor is involved. LUO noise regulations are theoretically enforced by the Building Department, however, since this Department does not have noise measurement capability, noise complaints are usually handled by DOH.
- 3.4 U.S. Environmental Protection Agency - The U.S. Environmental Protection Agency (EPA) has identified a range of yearly day-night equivalent sound levels, L_{dn} , sufficient to protect public health and welfare from the effects of environmental noise [Reference 4]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Ambient noise measurements were conducted to assess the existing acoustical environment. The measurement locations are shown in Figure 4. Noise level measurements were obtained using Larson-Davis Laboratories, Model 800, Integrating Sound Level Meters. The following results were measured.

Measurement Location	Date/Time	L_{eq} (dBA)	Measurement Time Interval(minutes)
1	4 May 1998 / 12:59 PM	65.8	16:31
2	4 May 1998 / 1:18 PM	53.1	12:17
3	4 May 1998 / 1:33 PM	63.7	15:39
4'	30 Sept. 1996 / 4:33 PM	48.0	15.04
5'	30 Sept. 1996 / 4:50 PM	44.2	15.09

1 See Reference 3

Presently, the dominant noise sources at the above locations include traffic, wind, birds, and occasional aircraft flybys. Measurement locations 1 and 3 experience high ambient noise levels (L_{eq}) due to their proximity to Kamehameha Highway and Ukee Street. Measurement locations 2, 4, and 5 are located in residential areas removed from high traffic thoroughfares.

5.0 POTENTIAL NOISE IMPACT DUE TO THE PROJECT AND NOISE MITIGATION

5.1 **Construction Noise** - Development of the Waiola Regional Park and Sports Complex Project will involve excavation, grading and the construction of infrastructure and buildings. The various construction phases of the project may generate significant amounts of noise, which may impact nearby residential areas. The actual noise levels produced will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 4. Earthmoving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used, assuming that pile driving will not be required.

In cases where construction noise exceeds, or is expected to exceed the DOH's "maximum permissible" property line noise levels [Reference 1], a permit must be obtained from the DOH to allow the operation of vehicles, construction equipment, power tools, etc., which emit noise levels in excess of "maximum permissible" levels. Specific permit restrictions for construction activities are:

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels...before 7:00 am and after 6:00 pm of the same day, Monday through Friday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels...before 9:00 am and after 6:00 pm on Saturday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

In addition, construction equipment and on-site vehicles or devices whose operations involve the exhausting of gas or air, excluding pile drivers, jack hammers and pneumatic hand tools weighing less than 15 pounds, must be equipped with mufflers, and construction vehicles using trafficway must satisfy the DOH's vehicular noise requirements [Reference 6].

Blasting, if required, could also produce noise impacts. However, blasting at construction sites near populated areas is usually accomplished by using numerous small charges detonated with small time delays. Blast mats can also be used to assist in directing the explosive energy into the rock, controlling flying debris, and muffling the noise. Thus, with the appropriate blast design techniques, the noise from blasting can be controlled within acceptable limits at the closest noise sensitive locations.

5.2 **Baseball Stadium** - Development of the Baseball Stadium, as shown in Figure 2, could impact nearby existing and future residences if noise from the stadium is not properly controlled. Potential noise sources include crowd noise and a public address system. The increase in noise level at the nearest residence will be approximately 3-5 dBA during high occupancy events (>2250 people). To mitigate the noise impacts any sound system loudspeakers should be oriented so as to not directly impact nearby homes and the hours of stadium use should be limited to avoid noise sensitive times, for example, no activities after 10:00 PM.

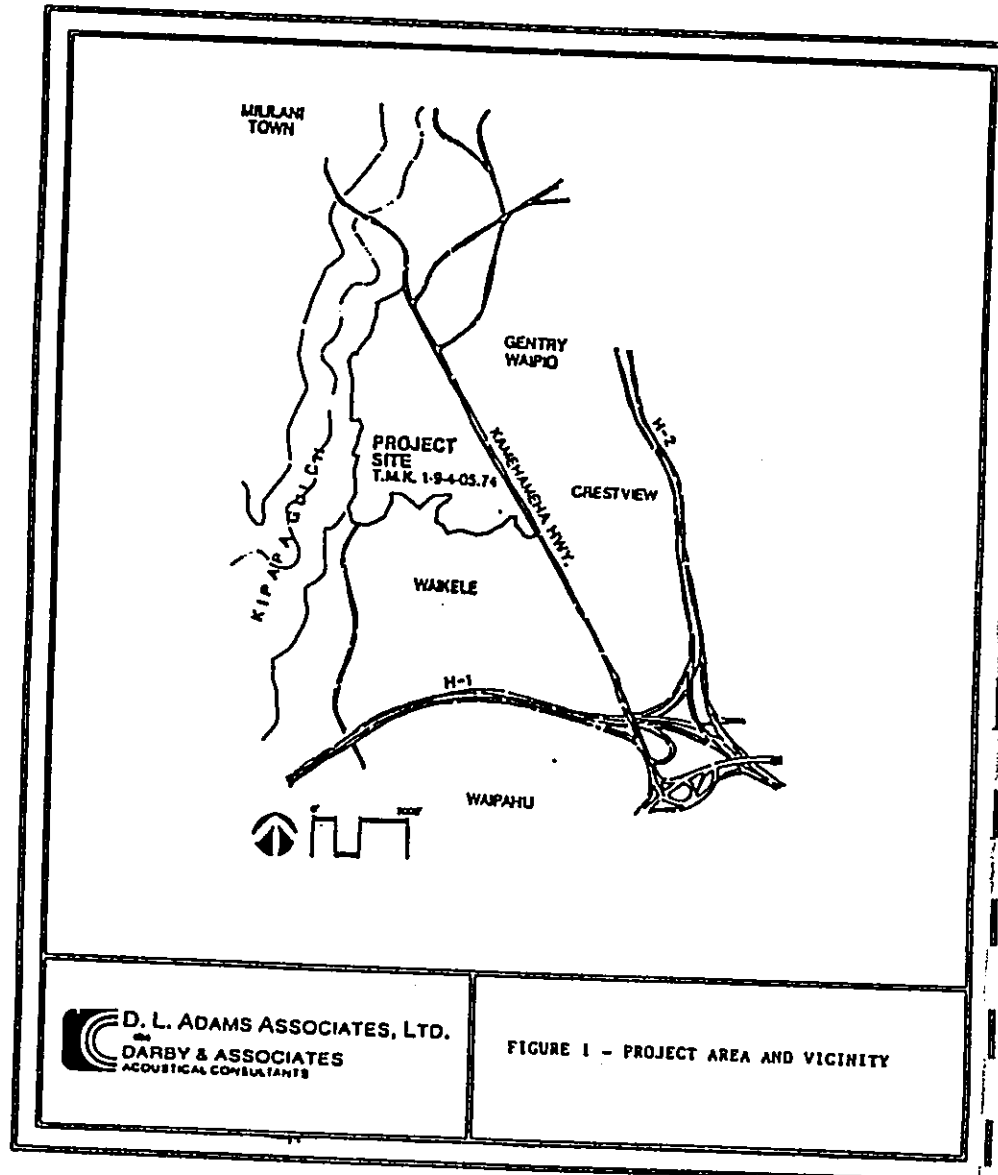
5.3 **Mechanical Equipment Noise** - The present development plan for the project includes a community center, a training facility, an aquatic center, and a field house. Sounds from stationary equipment at these facilities, e.g., air-conditioning and refrigeration units, exhaust fans and pumps, could impact the Gentry Waipio residential area. Mitigation of noise from such equipment to meet DOH noise regulations includes acoustic enclosures, noise barriers and/or exhaust silencers which should be included in the facility design.

5.4 **Boxcar Stadium and Track** - The Boxcar stadium and track is located in close proximity to the Waikele residential area. Potential noise sources include crowd noise and boxcar noise. To mitigate the noise impacts only non-motorized vehicles should be allowed and the hours of use should be limited to avoid noise sensitive times.

5.5 **Grounds Keeping and Maintenance Equipment Noise** - The upkeep of the proposed park will include use of lawnmowers, leaf blowers, trash removal vehicles etc. Noise from this equipment could have an impact on the Waikele residential community. To mitigate the noise impacts the hours of grounds keeping and maintenance work should be limited to avoid noise sensitive times.

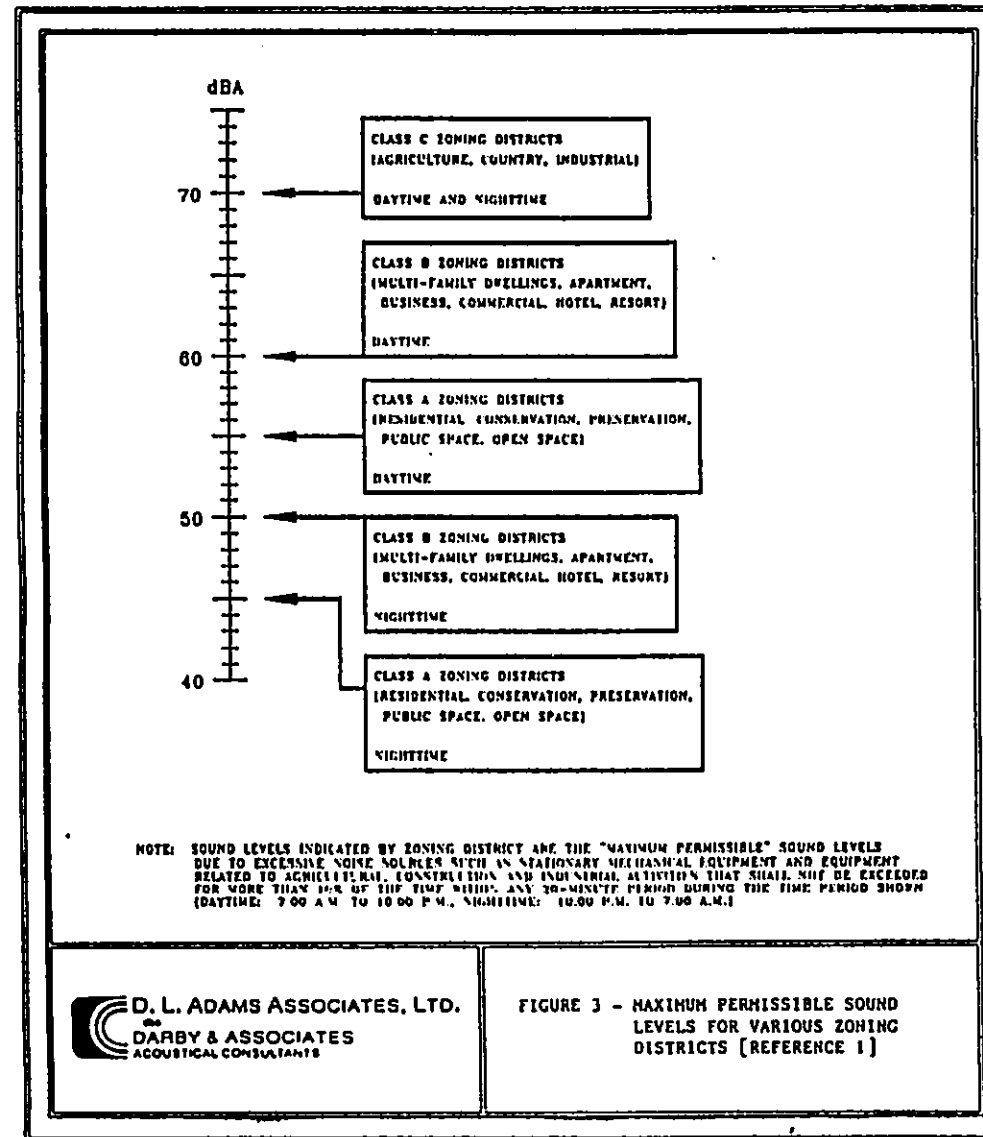
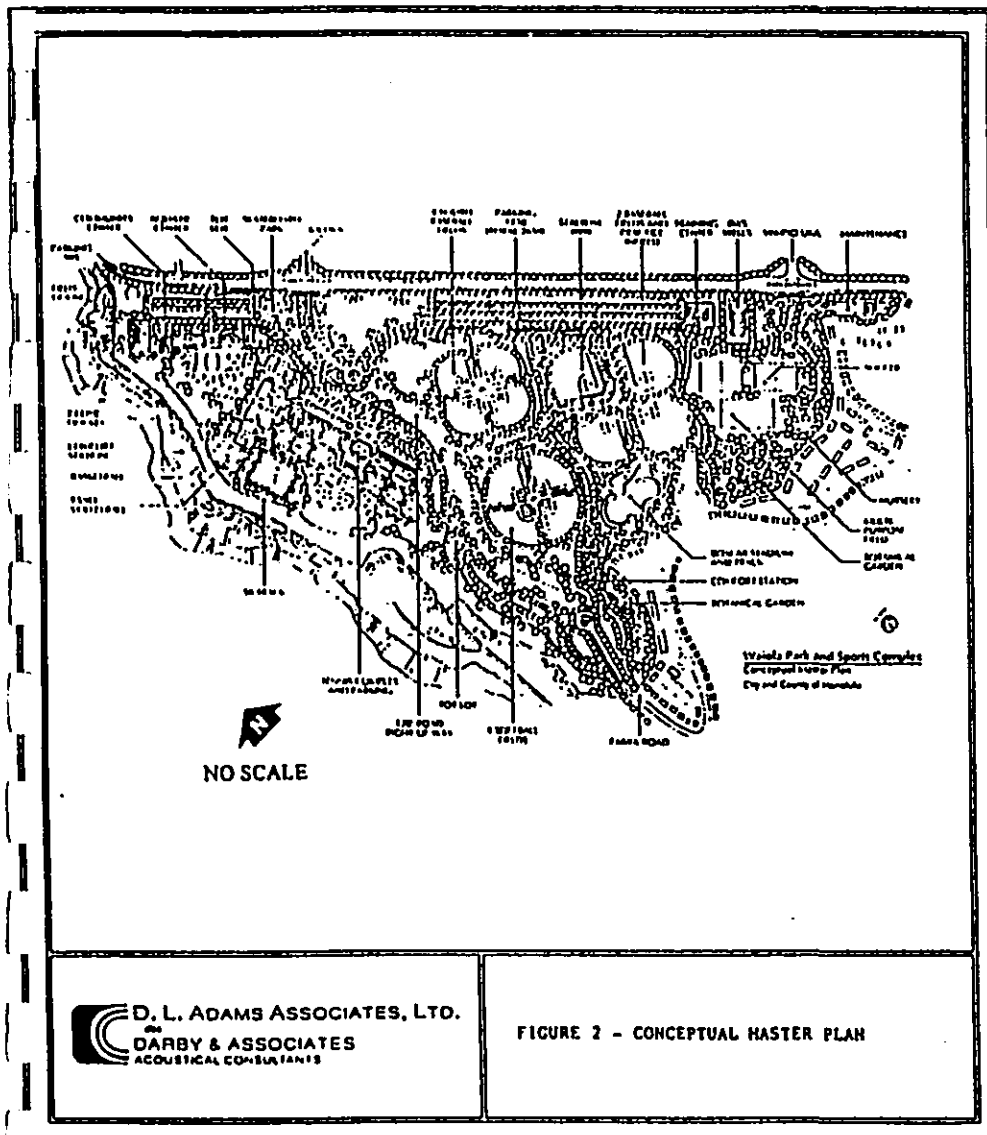
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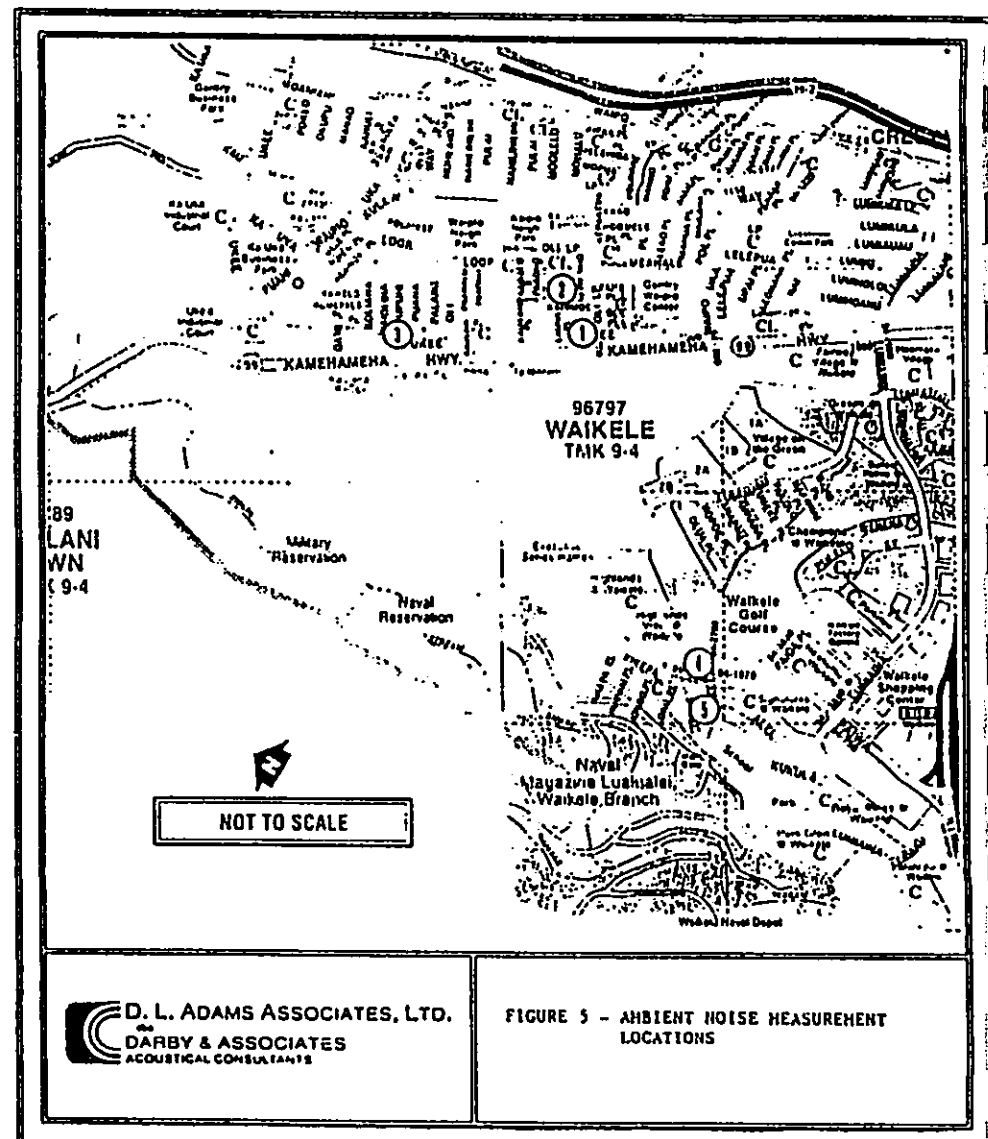
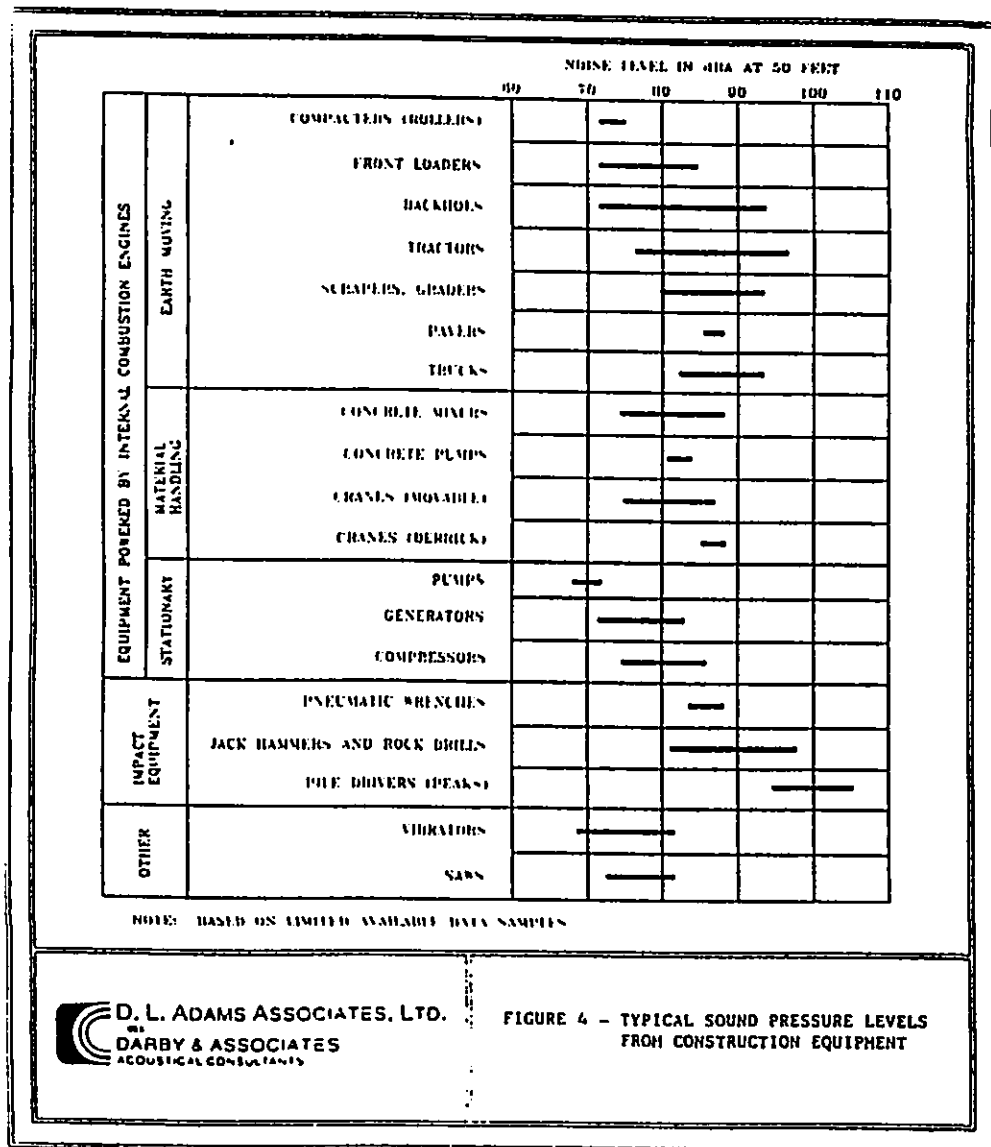
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FIGURE 1 - PROJECT AREA AND VICINITY





APPENDIX A
ACOUSTICAL TERMINOLOGY

Sound Pressure Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured in terms of decibels (dB) using precision instruments known as sound level meters. Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$\text{SPL} = 20 \log (P/P_{\text{ref}}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and P_{ref} is the reference pressure, 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. For example, if P is 20 micropascals, then $\text{SPL} = 0 \text{ dB}$, or if P is 200 micropascals, then $\text{SPL} = 20 \text{ dB}$. The relation between sound pressure in micropascals and sound pressure level in decibels (dB) is shown in Figure A-1.

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound levels, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined level of 53 dB, not 100 dB; two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of a sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 5 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

The human ear is more sensitive to sound in the frequency range of 250 Hertz (Hz) and higher, than in frequencies below 250 Hz. Due to this type of frequency response, a frequency weighting system, was developed to emulate the frequency response of the human ear. This system expresses sound levels in units of A-weighted decibels (dBA). A-weighted sound levels de-emphasizes the low frequency portion of the spectrum of a signal. The A-weighted level of a sound is a good measure of the loudness of that sound. Different sounds having the same A-weighted sound level are perceived as being about equally loud. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

Appendix A
Acoustical Terminology (Continued)

Statistical Sound Levels

The sound levels of long-term noise producing activities, such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels developed. It is known as the Exceedence Level, L_n . The Exceedence Level, L_n , represents the sound level which is exceeded for n% of the measurement time period. For example, $L_{10} = 60 \text{ dBA}$ indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10% of the time. Commonly used Exceedence Levels include L_{10} , L_{50} , L_{90} , and L_{95} , which are widely used to assess community and environmental noise. Figure A-2 illustrates the relationship between selected statistical noise levels.

Equivalent Sound Level

The Equivalent Sound Level, L_{eq} , represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound being measured over a specific time period. L_{eq} is commonly used to describe community noise, traffic noise, and hearing damage potential. It has units of dBA and is illustrated in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn} , is the Equivalent Sound Level, L_{eq} , measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations. Qualitative descriptions, as well as local examples of L_{dn} , are shown in Figure A-3.

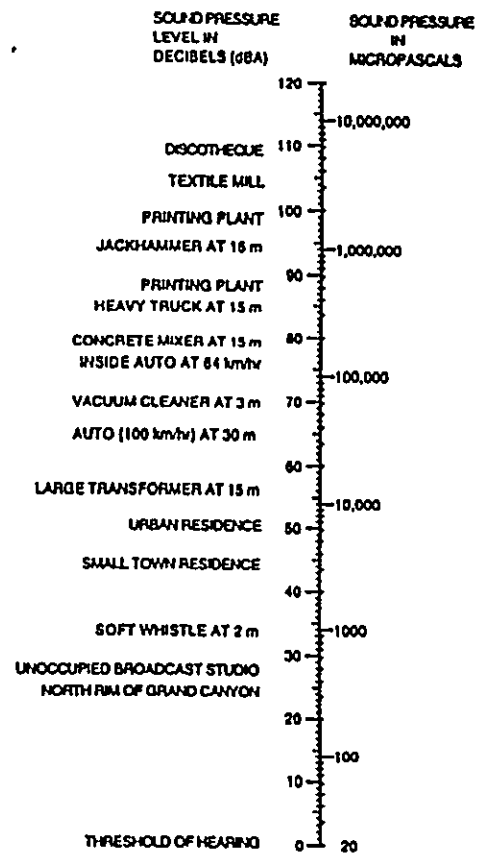


FIGURE A-1

THE RELATION BETWEEN SOUND PRESSURE, P, AND SOUND PRESSURE LEVEL, SPL. ALSO SHOWN ARE TYPICAL VALUES OF A-WEIGHTED SOUND LEVELS OF VARIOUS NOISE SOURCES.

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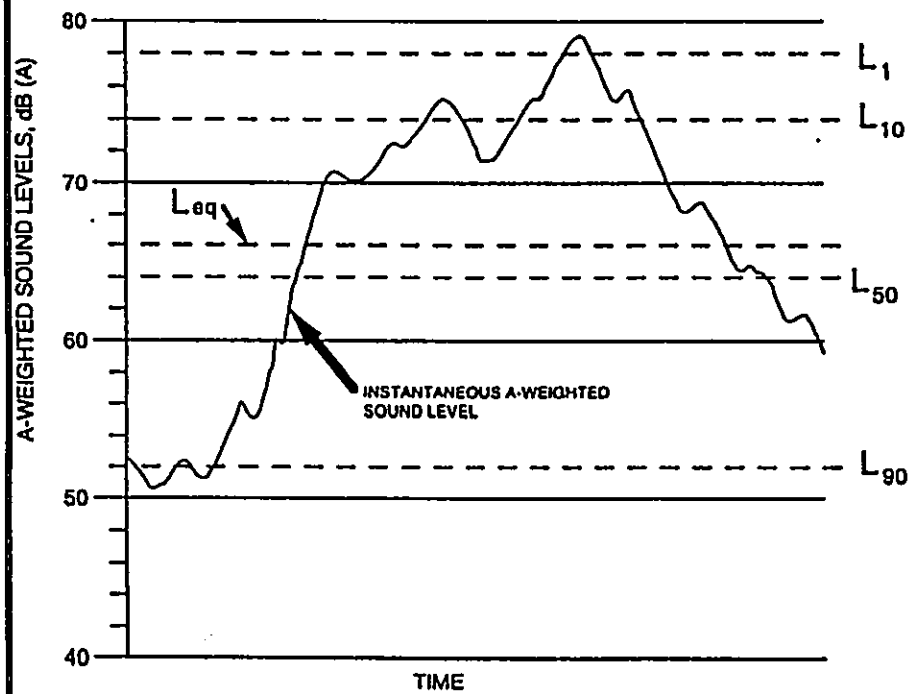
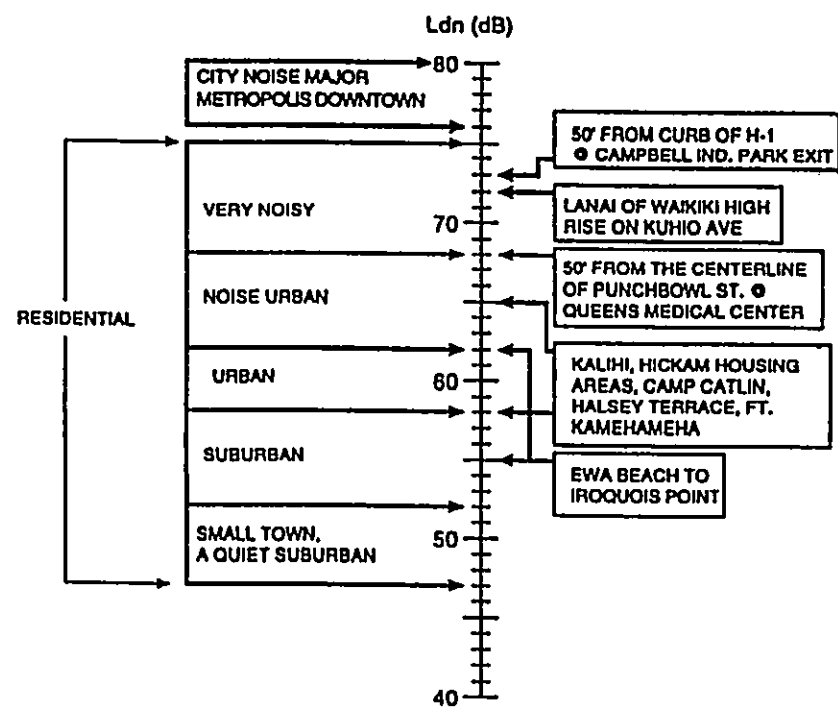


FIGURE A-2

COMPARISON OF AN INSTANTANEOUS SOUND LEVEL AND THE CORRESPONDING STATISTICAL SOUND LEVELS

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FIGURE A-3
 QUALITATIVE DESCRIPTION OF THE
 DAY-NIGHT EQUIVALENT SOUND LEVELS
 (L_{dn}) AND EXAMPLE L_{dn}'s AT SELECTED
 LOCATIONS ON OAHU

APPENDIX E
AIR QUALITY STUDY

**AIR QUALITY STUDY
FOR THE PROPOSED
WAIOLA REGIONAL PARK AND SPORTS COMPLEX PROJECT**

OAHU, HAWAII

**Prepared for:
Plan Pacific**

April 1998



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Figure

- 1 Project Location Map

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Table

- 1 Summary of State of Hawaii and National Ambient Air Quality Standards
- 2 Annual Wind Frequency for Honolulu International Airport

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- 3 Air Pollution Emissions Inventory for Island of Oahu, 1993
- 4 Annual Summaries of Ambient Air Quality Measurements for Monitoring Stations Nearest Waiola Regional Park and Sports Complex Project
- 5 Estimated Worst-Case 1-Hour Carbon Monoxide Concentrations Along Roadways Near Waiola Regional Park and Sports Complex Project
- 6 Estimated Worst-Case 8-Hour Carbon Monoxide Concentrations Along Roadways Near Waiola Regional Park and Sports Complex Project

1.0 SUMMARY

The City and County of Honolulu is proposing to develop the Waiola Regional Park and Sports Complex on a 269-acre parcel of land in Oahu's central plateau area. The proposed project consists of a regional park and sports complex equipped with a variety of recreational facilities which will include baseball, softball and soccer fields; basketball, volleyball and tennis courts; an in-line skating court; a skateboarding bowl; an aquatic center; a boxcar racing track; a community center; and various other infrastructure improvements and support facilities. Project development is expected to occur in phases over a period of approximately six years. 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. Mitigative measures to reduce any potential air quality impacts from the project are suggested 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 more stringent than the comparable national limits except for sulfur dioxide and the recently revised national particulate matter standard.

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 leeward and inland situation. Winds are predominantly trade winds which are deviated somewhat from the northeast toward the east by the local terrain. During winter, occasional storms

may generate strong winds from the south (kona winds) for brief periods. When the trade winds or kona winds are weak or absent, landbreeze-seabreeze circulations may develop. Wind speeds typically vary between about 5 and 15 miles per hour providing relatively good ventilation much of the time. Temperatures in the Oahu area leeward of the Koolaus are generally very moderate with average daily temperatures ranging from about 65°F to 85°F. Extreme temperatures range from about 50°F to about 95°F. Rainfall is relatively moderate with an average of about 40 inches per year.

The present air quality of the project area is relatively good and has probably improved recently with the discontinuation of sugar cane growing in the Ewa Plain area. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all national air quality standards are currently being met, although occasional exceedances of the more stringent state standards for ozone and for carbon monoxide may occur.

If the proposed project is given the necessary approvals to proceed, it is inevitable that some short- and 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 should 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. Vehicles will primarily use Kamehameha Highway, Ka Uka Boulevard, Waipio Uka Street and Paiwa Street to access the project site. To assess the impact of emissions from these vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at several intersections along these roadways 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 probably well within compliance with the national ambient air quality standards but that slight exceedances of the more stringent state standards are possible at several locations in the project area.

In the year 2005 without the project, carbon monoxide concentrations were predicted to decrease at most locations studied, despite the expected increase in traffic, because of the assumed future retirement of older, more-polluting motor vehicles. The location with the highest worst-case concentration was the intersection of Kamehameha Highway and Ka Uka Boulevard. This location was predicted to potentially exceed the state standards by a small margin, although the predicted worst-case concentrations were well within the less stringent national standards. Worst-case concentrations at all other locations studied were predicted to comply with both state and national standards.

With the project in the year 2005, worst-case carbon monoxide concentration levels within the project area were predicted to increase slightly to moderately compared to the without-project case at all of the locations studied. Worst-case concentration levels near the intersections of Kamehameha Highway and Ka Uka Boulevard, Kamehameha Highway and Waipio Uka Street, and Lumialina Street and Paiwa Street were predicted to potentially exceed the state 1-hour and 8-hour standards for carbon monoxide. Compliance with the national 1-hour and 8-hour standards was predicted to be achieved at all of the locations studied.

It should be noted that, because the state standards for carbon monoxide are set at such stringent levels, it is likely that the standards are currently exceeded at many locations in the state that have even moderate traffic volumes.

Options available to mitigate long-term, traffic-related air pollution are generally to improve roadways, to reduce individual

vehicular emissions or to reduce traffic. However, in some cases, improving roadways may actually result in reduced air quality, and reducing individual vehicular emissions is probably beyond the control of the proposed project. Attempting to reduce traffic volumes through the promotion of bus service, bicycling and walking to the proposed development could serve to reduce air quality impacts, but this mitigation measure is generally only partially successful. Another potential mitigation measure might be to provide added buffer zones between new walkways and roadways where space is available. Technically, however, the public would have to somehow be excluded from the buffer zones.

In view of the fact that the predicted worst-case carbon monoxide concentrations with the project are well within the national ambient air quality standards and that the more stringent state standards are probably currently exceeded near many roadway intersections in the state where traffic volumes are moderate to high, implementing air quality mitigation measures for long-term traffic-related impacts from the proposed project is probably unnecessary and unwarranted.

2.0 INTRODUCTION AND PROJECT DESCRIPTION

The City and County of Honolulu is proposing to develop the Waiola Regional Park and Sports Complex on 269 acres in the southern portion of the island of Oahu's central plateau, which lies between the Koolau and Waianae Mountain Ranges. A project location map is presented as Figure 1. The project site is bounded by Kamehameha Highway to the east; Kipapa Gulch and the Waikele Branch, Naval Magazine, Lualualei to the west; the Waikele suburban community to the south; and the nearby Mililani Town to

the north. Although previously used for sugar and pineapple cultivation, the project site is currently fallow.

The proposed project consists of a regional park and sports complex equipped with a variety of recreational facilities. The sports complex will eventually include baseball, softball and soccer fields; basketball, volleyball and tennis courts; an in-line skating court; a skateboarding bowl; an aquatic center; a boxcar racing track; and a community center. Various other infrastructure improvements and support facilities are included in the project. Project development is expected to occur in phases over a period of approximately six years.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could result from construction and use of the proposed facilities. Measures to mitigate these 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, and the state 1-hour limit for

ozone is more than two times as stringent as the national 1-hour standard. The national 1-hour ozone standard will be phased out during the next three years 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 1991, 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. To date, the Hawaii Department of Health has not updated the state particulate standards.

4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affects 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.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. The site of the proposed project is

located between Oahu's two mountain ranges in the southern portion of the Schofield Saddle area.

The nearest long-term wind data available for the project area are collected either at the Barbers Point Naval Air Station, located about 13 miles to the southwest, or at the Honolulu International Airport, located about 10 miles to the southeast. These data, however, are probably only partially representative of the project site due to the local terrain effects. In any case, wind frequency data given in Table 2 Honolulu International Airport show that the annual prevailing wind direction for this area of Oahu is east-northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and nearly 75 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in association with winter storms. Wind speeds average about 11 mph (10 knots) and mostly vary between about 4 and 18 mph (5 and 15 knots). Surface winds at the project site are likely at least somewhat similar to those recorded at Honolulu International Airport, but speeds are probably lower on the average and directions are perhaps more southeasterly due to terrain effects.

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 depend 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. At Honolulu International Airport, average annual daily minimum and maximum temperatures are 70°F and 82°F, respectively [1]. The extreme minimum temperature on record is 55°F, and the extreme maximum is 93°F. Temperatures at the project site are probably slightly cooler due to the more elevated situation.

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 oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the project area, stability class 5 or 6 is probably the highest stability class that occurs, developing during clear, calm nighttime or early morning hours when temperature inversions form due to radiational cooling. 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 at most locations 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. Average annual rainfall in the project area is about 40 inches based on data from nearby locations [2]. Although there is no well-defined wet season, more rain tends to occur during the winter months. Monthly rainfall may vary from as little as a trace to as much as 15 inches or more.

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 3 presents an air pollutant emission summary for the island of Oahu 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 particulate emissions on Oahu originate from area sources, such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively by

point sources, such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources, although area sources (mostly motor vehicle traffic) also 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. Based on previous emission inventories that have been reported for Oahu, it appears that emissions of particulate and nitrogen oxides have increased during the past ten years, while emissions of sulfur oxides, carbon monoxide and hydrocarbons have declined.

Kamehameha Highway, which forms the eastern border of the project site, is a semi-major arterial roadway that presently carries moderate to heavy levels of vehicle traffic during peak traffic hours. Emissions from motor vehicles using this roadway, primarily nitrogen oxides and carbon monoxide, will tend to be carried toward the project site by the probable easterly or southeasterly prevailing winds in the area. Emissions from the more distant H-1 and H-2 Freeways passing south and east of the site, respectively, may also have some affect on the air quality of the project site.

The nearest large industrial source of air pollution is the Waiiau Power Plant situated about four miles to the southeast. Other smaller industries exist in the area. Emissions from Waiiau Power Plant consist primarily of sulfur dioxide and nitrogen oxides from oil-burning generator units. Due to the prevailing wind pattern in the area, it is unlikely that these emissions significantly impact air quality in the project area.

Until recently, air pollution in the project area originating from agricultural sources could mainly be attributed to sugar cane operations to the southwest of the project site. Emissions from both the mill and the canefield operations in the area have been eliminated with the closure of the Ewa Plantation. It is expected that diversified agriculture will be promoted on the former sugarcane lands. Due to the prevailing wind pattern in the area, any air pollution emissions associated with diversified agricultural operations will occur downwind of the project site much of the time. Hence, any associated smoke, dust, and/or odor will mostly be carried away from the project site.

Natural sources of air pollution emissions that also could affect the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the island of Hawaii.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. Table 4 shows an annual summary of air quality measurements that were made nearest to the project site for each of the regulated air pollutants for the period 1989 through 1993. These are the most recent data that are currently available.

During this period sulfur dioxide was monitored by the State Department of Health at air quality stations located at Barbers Point and at Makaiwa Gulch. Both of these sites are situated about 8 miles to the southwest. There were no exceedances of the state/national 24-hour AAQS for sulfur dioxide during the 5-year

period. Concentrations monitored were consistently low with 24-hour averages ranging from near 0 to 47 $\mu\text{g}/\text{m}^3$.

The nearest monitoring station for particulate matter less than 10 microns in diameter (PM-10) is located at Pearl City, about 4 miles to the southeast. Twenty-four hour average PM-10 concentrations monitored at this location ranged from 6 to 42 $\mu\text{g}/\text{m}^3$ between 1989 and 1993. Average daily concentrations were approximately 15 $\mu\text{g}/\text{m}^3$. All values reported were within the state and national AAQS.

The nearest carbon monoxide measurements were made at the Department of Health building in downtown Honolulu. During the 5-year period, the average daily maximum 1-hour concentration measured at this location was less than 2 mg/m^3 . During the most recent year reported, 1993, the daily maximum 1-hour concentration ranged from 0.3 to 13.3 mg/m^3 , with one exceedance of the state 1-hour AAQS recorded. The national AAQS was not exceeded. During previous years (1989-92), maximum 1-hour concentrations were lower; one exceedance of the state 1-hour AAQS was measured in 1991 (although compliance with the less stringent national standard was achieved). Daily maximum 8-hour values for 1989-93 have not been reported at this writing, but concentrations for earlier years were less than 5 mg/m^3 and averaged about 1.3 mg/m^3 . No exceedances of the state or national 8-hour AAQS have been reported. Present concentrations of carbon monoxide in the project area are estimated later in this study based on air quality modeling of vehicular emissions.

The nearest available ozone measurements were obtained at Sand Island (about 12 miles southeast of the project site). The maximum 1-hour concentration for each year from 1990 to 1993 has averaged 118 $\mu\text{g}/\text{m}^3$ and two to seven exceedances of the state AAQS per year have been recorded. Ozone concentrations were somewhat lower during 1989 when a maximum concentration of 96 $\mu\text{g}/\text{m}^3$ was measured and no exceedances of the state standard were registered.

The nearest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1991 and 1993. Lead concentrations at this location have had a downward trend for several years, most probably reflecting the increased use of unleaded gasoline. Average quarterly concentrations were near or below the detection limit, and no exceedances of the state AAQS were recorded. Monitoring for this parameter was discontinued during 1988 and resumed in 1991.

Nitrogen dioxide was not monitored by the Department of Health anywhere in the state during the 1989-93 reporting period. Concentrations of this pollutant were measured from 1971 through 1976 at Barbers Point, and annual mean values were found to vary from 11 to 29 $\mu\text{g}/\text{m}^3$, safely inside the state and national AAQS.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide, particulate matter and lead are currently being met at the project site. It is likely, however, that the state AAQS for ozone may be exceeded on occasion based on the Sand Island

measurements for this parameter. Carbon monoxide readings from urban Honolulu indicate that the state AAQS for carbon monoxide may also be exceeded at a rate of one to three times per year in traffic congested areas.

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 related to slow-moving construction equipment traveling to and from the project site and from a temporary increase in local traffic caused by commuting construction workers.

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 [3] 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 in the project area would likely be somewhere near that level. In any case, State of Hawaii Air Pollution Control Regulations [4] 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.

Slow-moving construction vehicles traveling on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions are increased, but this impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity. 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 on nearby roadways, potentially causing long-term impacts on ambient air quality in the project vicinity. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminants.

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. The restrictions on emissions from new motor vehicles will lower average emissions each year as more and

more older vehicles leave the state's roadways. Carbon monoxide emissions, for example, will go down by an average of about 10 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 the 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 1997 with present conditions, (2) year 2005 (the expected project completion date) without the project, and (3) year 2005 with the project. To begin the modeling study, 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, the same intersections identified by the project traffic engineers as being impacted by the project were selected for air quality analysis. These included Kamehameha Highway at Ka Uka Boulevard, Ka Uka Boulevard at Ukee Street, Kamehameha Highway at Waipio Uka Street and Lumiaina Street at Paiwa Street. Intersection

configurations and traffic conditions at each of these locations are detailed in the traffic impact report for the project [5].

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 will provide another measure of significance.

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

The EPA computer model MOBILESA was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILESA 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 and projected vehicle mix in the project area was estimated to be 62.6% light-duty gasoline-powered automobiles, 26.9% light-duty gasoline-powered trucks and vans, 3.1% heavy-duty gasoline-powered vehicles, 0.3% light-duty diesel-powered vehicles, 6.4% heavy-duty diesel-powered trucks and buses, and 0.7% motorcycles.

Other key inputs to the MOBILESA emission model are the cold/hot start fractions. Motor vehicles operating in a cold- or hot-start mode emit excess air pollution. Typically, motor vehicles reach stabilized operating temperatures after about 4 miles of driving. For traffic operating within the project area, it was assumed that about 21 percent of all vehicles would be operating in the cold-start mode and that about 27 percent would be operating in the hot-start mode. These are typical default (national average) values.

Ambient temperatures of 59 and 68 degrees F were used for weekday morning and afternoon peak-hour emission computations, respectively. An ambient temperature of 68 degrees F was also used for the midday Saturday emission computations. These are conservative assumptions since morning/afternoon/midday ambient temperatures will generally be warmer than this, and emission estimates given by MOBILESA are inversely proportional to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILESA, 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 recently, 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. All emission factors that were input to CAL3QHC for free-flow traffic were obtained from MOBILE5A based on an assumed free-flow vehicle speed of 25 mph.

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Sidewalks currently exist very close to most of the roadway intersections studied. 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. 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 5 was assumed for the weekday morning and afternoon cases, and stability category 4 was assumed for the midday Saturday 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 300 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 moderate to 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 1 ppm to all predicted concentrations for 1997. Although increased traffic is expected to occur within the project area within 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 1 ppm was assumed to persist for the future scenarios studied.

Predicted Worst-Case 1-Hour Concentrations

Table 5 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour weekday morning, weekday afternoon and midday Saturday 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 1997 with existing traffic, year 2005 without the project and year 2005 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 (1997) case was 10.7 mg/m³. This was projected to occur during the weekday afternoon peak traffic hour near the intersection of Kamehameha Highway and Waipio Uka Street. The next highest value, 10.4 mg/m³, was estimated to occur during the weekday morning peak traffic hour near the intersection of Kamehameha Highway and Ka Uka Boulevard. Concentrations at other locations and times studied ranged between about 6 and 10 mg/m³. All predicted worst-case 1-hour concentrations for the 1997 scenario were within the national AAQS of 40 mg/m³, but concentrations at three of the four intersections studied slightly exceeded the more stringent state standard (which is set at 10 mg/m³). It should be noted that because the state 1-hour carbon monoxide standard is set at such a stringent level, it is likely that it is currently exceeded at many locations in the state that have even moderate traffic volumes.

In the year 2005 without the proposed project, a worst-case 1-hour concentration of 10.8 mg/m³ was predicted to occur during the weekday afternoon peak-traffic hour near the intersection of Kamehameha Highway and Ka Uka Boulevard. The weekday morning worst-case concentration at this location, 10.5 mg/m³, was the next highest value for the project area. Peak-hour worst-case values at the other locations studied for the 2005 without project scenario ranged between about 5 and 10 mg/m³. Predicted worst-case 1-hour concentrations for this scenario were within both state and national AAQS except near the intersection of Kamehameha Highway and Ka Uka Boulevard where a slight exceedance of the more stringent state standard was predicted. Concentrations at all locations were lower compared to the 1997 scenario except near the intersection of Kamehameha Highway and Ka Uka Boulevard. The lower concentrations were due to the assumed retirement of higher pollution vehicles as described earlier in this report, which more than compensates for the future increase in traffic. Concentrations increased near the intersection of Kamehameha Highway and Ka Uka Boulevard because of roadway improvements completed during early 1998, which increased the number of traffic lanes. The added traffic lanes cause more traffic to be concentrated near the intersection.

Predicted 1-hour worst-case concentrations for the 2005 with project scenario ranged from 5.9 mg/m³ during the midday Saturday at the Ka Uka Boulevard/Ukee Street intersection to 13.2 mg/m³ during the weekday afternoon at the Kamehameha Highway/Waipio Uka Street intersection. Compared to the 2005 without project case, predicted worst-case concentrations for 2005 with the project were higher at all four intersections studied. Worst-case concentrations with the project in 2005 were also predicted to be higher than the existing levels except near the intersection of Ka Uka Boulevard and Ukee Street. All of the locations studied were

predicted to meet the national AAQS, but locations near three of the four intersections modeled were predicted to potentially exceed the more stringent state standard.

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 dispersion conditions are more variable (and hence more favorable) 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 recent 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 Honolulu reported by the Department of Health [11] suggest that this factor may range between about 0.35 and 0.55 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 6. For the 1997 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the four locations studied ranged from 4.9 to 5.4 mg/m³, either slightly exceeding or nearly exceeding the state standard of 5 mg/m³ but remaining well within the national limit of 10 mg/m³. For the year 2005 without

project scenario, worst-case concentrations were about 10 to 20 percent lower compared to the 1997 case except for the Kamehameha Highway/Ka Uka Boulevard intersection where the concentration increased by about 4 percent. The worst-case concentration estimates for all locations met both the state and the national 8-hour standards except at the Kamehameha Highway/Ka Uka Boulevard intersection where the worst-case concentration estimate slightly exceeded the more stringent state standard. For the 2005 with project scenario, worst-case concentrations at all locations studied were predicted to increase slightly to moderately. All predicted 8-hour concentrations for this scenario were within the national AAQS, but all slightly exceeded the more stringent state AAQS except for the intersection of Ka Uka Boulevard and Ukee Street.

Again, it should be noted that, because the state 8-hour carbon monoxide standard is set at such a stringent level, it is likely that it is currently exceeded at many locations in the state that have even moderate traffic volumes.

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 windscreens 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 should 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 the proposed project is completed, emissions from project-related traffic will cause an increase in carbon monoxide concentrations near intersections in the project area. Without the project, concentrations in the project area would likely decrease with time and air quality would likely improve. The most significant long-term impacts on air quality will likely occur near the intersection of Kamehameha Highway and Waipio Uka Street, and this is where the highest concentrations in the area will likely occur. With the project, worst-case carbon monoxide concentrations should remain with the national AAQS, but concentrations could potentially exceed the more stringent state standards near the intersections of Kamehameha Highway at Ka Uka Boulevard, Kamehameha Highway at Waipio Uka Street and Lumiaina Street at Paiwa Street.

Due to the low levels at which the state carbon monoxide standards are set, it may not be possible to achieve continuous compliance with the standards, at least within some small hot-spot areas near high-volume intersections in the project area. Because the state standards are set at such stringent levels, it is likely that the standards are currently exceeded at many locations in the state that have even moderate traffic volumes.

Options available to mitigate long-term, traffic-related air pollution are generally to improve roadways, to reduce individual vehicular emissions or to reduce traffic volumes. Improving roadways may not always provide reductions in maximum carbon

monoxide concentrations. In some cases, roadway improvements may actually result in higher maximum concentrations when, for example, traffic lanes are added and more traffic becomes concentrated near an intersection. Reduction of emissions from individual vehicles would have to be achieved through the promulgation of local, state or federal air pollution control regulations, which is beyond the scope or ability of the proposed project. Currently, the state standards for tailpipe emissions are not commensurate with the stringent state air quality standards. Also, Hawaii currently does not require annual inspections of motor vehicle air pollution control equipment, which would likely provide reduced emissions and improved air quality. Perhaps the only practical way for the proposed project to reduce air quality impacts would be to attempt to reduce project-related traffic during peak traffic hours, although this type of mitigation measure is generally considered only partially successful. Reducing traffic volumes could conceivably be achieved by promoting bus service, bicycle riding and walking to the park and sports complex and by scheduling activities to begin and end during off-peak traffic periods.

Another potential mitigation measure might be to provide added buffer zones between new walkways and roadways where possible, although technically, the public would have to somehow be excluded from the buffer zones. The predicted worst-case concentrations in this report are based on a separation distance of 3 m (10 ft) between walkways and roadways. Doubling this distance to about 6 m (20 ft) would reduce maximum concentrations by about 10 to 15 percent.

Given that the predicted worst-case carbon monoxide concentrations are well within the national ambient air quality standards and

that the more stringent state standards are probably currently exceeded near many roadway intersections in the state where traffic volumes are moderate to high, implementing air quality mitigation measures for long-term traffic-related impacts is probably unnecessary and unwarranted.

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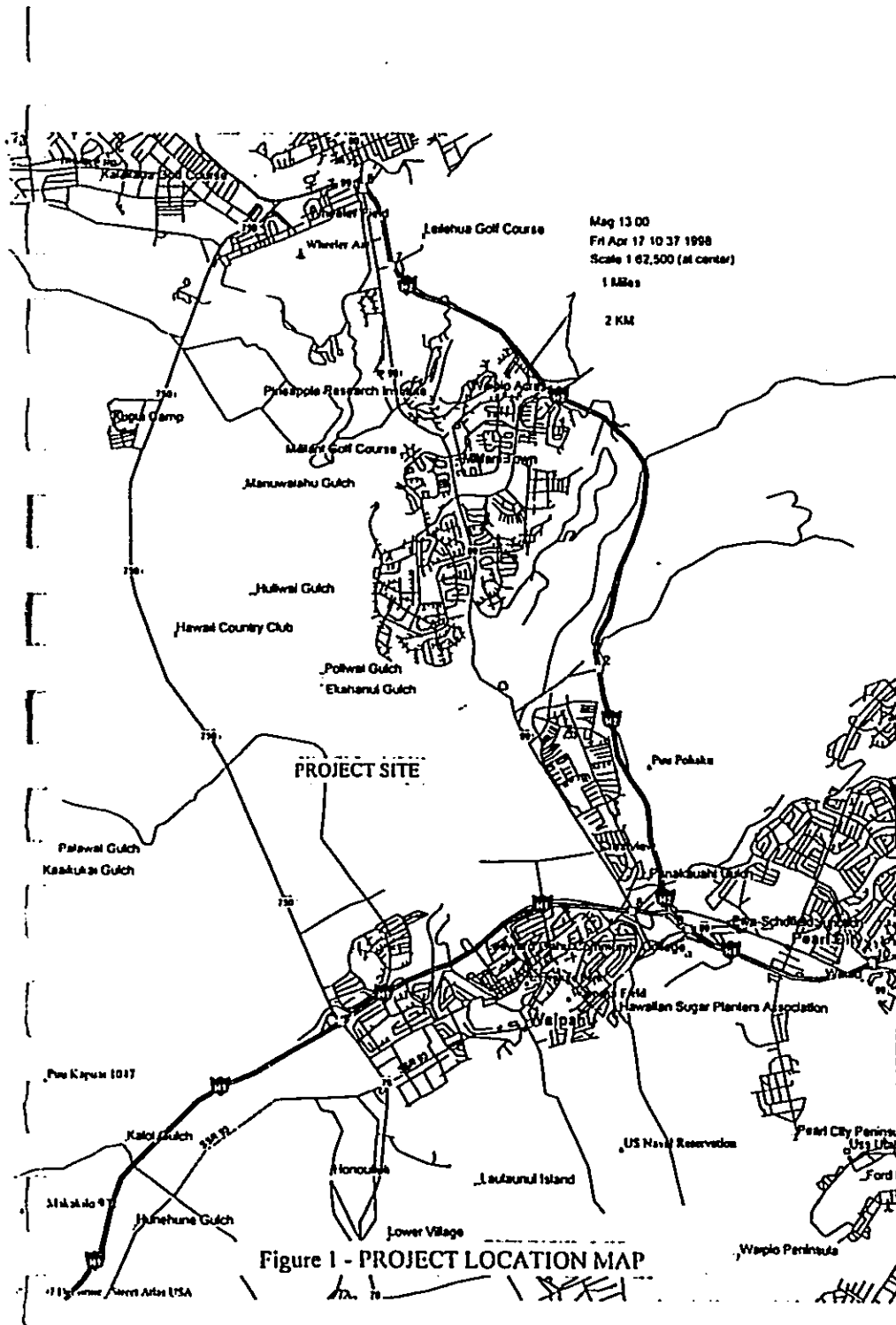


Table 1
SUMMARY OF STATE OF HAWAII AND NATIONAL
AMBIENT AIR QUALITY STANDARDS

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

^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
ANNUAL WIND FREQUENCY FOR HONOLULU INTERNATIONAL AIRPORT (%)

Wind Direction	Wind Speed (knots)									Total
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	>40	
N	0.5	2.5	1.3	0.5	0.0	0.0	0.0	0.0	0.0	4.8
NNE	0.3	1.2	1.6	1.5	0.2	0.0	0.0	0.0	0.0	4.7
NE	0.3	2.1	6.1	11.0	3.2	0.3	0.0	0.0	0.0	23.0
ENE	0.2	2.5	10.9	16.6	4.1	0.3	0.0	0.0	0.0	34.7
E	0.1	1.0	2.5	2.8	0.5	0.0	0.0	0.0	0.0	7.0
ESE	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.1
SE	0.0	0.3	0.8	1.0	0.1	0.0	0.0	0.0	0.0	2.2
SSE	0.1	0.4	1.2	0.7	0.1	0.0	0.0	0.0	0.0	2.4
S	0.1	0.5	1.4	0.6	0.1	0.0	0.0	0.0	0.0	2.7
SSW	0.0	0.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.5
SW	0.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	1.5
WSW	0.0	0.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	1.2
W	0.1	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0	1.1
WNW	0.2	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.0
W	0.4	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	3.8
WNW	0.5	2.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	3.8
CALM	2.5									2.5
TOTAL	5.4	18.3	30.6	36.5	8.5	0.7				100.0

Source: Climatology of the United States No. 90 (1965-1974), Airport Climatological Summary, Honolulu International Airport, Honolulu, Hawaii, U.S. Department of Commerce, National Climatic Center, Asheville, NC, August 1978.

Table 3
AIR POLLUTION EMISSIONS INVENTORY FOR
ISLAND OF OAHU, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	25,891	49,374	75,265
Sulfur Oxides	39,230	nil	39,230
Nitrogen Oxides	92,436	31,141	123,577
Carbon Monoxide	28,757	121,802	150,559
Hydrocarbons	4,160	421	4,581

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 4
ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS
FOR MONITORING STATIONS NEARBY
WAIOLA REGIONAL PARK AND SPORTS COMPLEX PROJECT

Parameter / Location	1989	1990	1991	1992	1993
Sulfur Dioxide / Downtown Honolulu					
No. of 24-Hr Samples	52	60	53	34	217
Range of 24-Hr Values (ppm)	<3-8	<3-43	<3-43	0-3	0-9
Average Daily Value (ppm)	4.5	4.5	4.5	1	2
No. of State AAQS Exceedances	0	0	0	0	0
PM-10 / Liliha					
No. of 24-Hr Samples	35	34	55	46	30
Range of 24-Hr Values (ppm)	10-33	0-36	4-33	0-35	0-52
Average Daily Value (ppm)	16	15	16	16	16
No. of State AAQS Exceedances	0	0	0	0	0
Carbon Monoxide / Downtown Honolulu					
No. of Days of 1-Hr Samples	323	342	340	294	220
Range of 1-Hr Values (ppm)	0.3-9.7	0.1-7.1	0.3-10.1	0.4-9.2	0.3-12.3
Arithmetic Average of 1-Hr Values (ppm)	1.9	1.5	1.7	1.6	1.6
No. of State AAQS Exceedances	0	0	1	0	1
Ozone / Sand Island					
No. of Days of 1-Hr Samples	342	346	312	298	299
Range of 1-Hr Values (ppm)	0-54	0-116	0-120	0-126	11-111
Arithmetic Average of 1-Hr Values (ppm)	15	26	30	34	60
No. of State AAQS Exceedances	0	2	3	6	7
Lead / Downtown Honolulu					
No. of 24-Hr Samples	...	...	50	44	31
Range of 24-Hr Values (ppm)	...	...	0-0.1	0-0.1	0-0.1
Average Quarterly Value (ppm)	...	...	0.0	0.0	0.0
No. of State AAQS Exceedances	...	...	0	0	0
Nitrogen Dioxide / Kapolei					
No. of 24-Hr Samples	...	...	...	...	131
Range of 24-Hr Values (ppm)	...	...	...	...	0-25
Average Daily Value (ppm)	...	...	...	...	12
No. of State AAQS Exceedances	...	...	...	...	0

Source: Hawaii Air Quality Data for the Period of January 1988 to December 1993, Hawaii Department of Health.

Table 5
ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS NEAR INTERSECTIONS IN
VICINITY OF WAIOLA REGIONAL PARK AND SPORTS COMPLEX PROJECT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario					
	1997/Present		2005/Without Project		2005/With Project	
	Weekday AM	Weekday PM	Saturday	Weekday AM	Weekday PM	Saturday
Kamehameha Hwy at Ka Uka Blvd	10.4	10.2	9.0	10.5	10.8	9.8
Ka uka Blvd at Ukee Street	9.8	8.0	6.0	8.0	7.4	5.4
Kamehameha Hwy at Waipio Uka Street	9.1	10.7	9.6	7.7	9.0	7.9
Lumaina Street at Paia Street	9.6	10.0	9.3	8.6	9.1	8.2
				10.4	13.0	11.0
				8.0	8.4	5.9
				8.9	13.2	10.9
				9.3	10.7	9.3

Hawaii State AAQS: 10
National AAQS: 40

Table 6

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS NEAR INTERSECTIONS IN VICINITY OF WAIOLA REGIONAL PARK AND SPORTS COMPLEX PROJECT
(milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	1997/Present	2005/Without Project	2005/With Project
Kamehameha Hwy at Ka Uka Blvd	5.2	5.4	6.5
Ka uka Blvd at Ukee Street	4.9	4.0	4.2
Kamehameha Hwy at Waipio Uka Street	5.4	4.5	6.6
Lumilaina Street at Paia Street	5.0	4.6	5.4

Hawaii State AAQS: 5
National AAQS: 10

APPENDIX F
PHASE I ENVIRONMENTAL SITE ASSESSMENT

M F A MASA FUJIOKA & ASSOCIATES

ENVIRONMENTAL • GEOCHEMICAL • HYDROGEOLOGICAL CONSULTANTS
1215 HALAWA VALLEY STREET, SUITE 202 • HONOLULU, HAWAII 96813-2001
PHONE: 808-946-3966 • FAX: 808-946-3967

May 27, 1998
MFA Job No. 98231-004
Fax No: 739-3595

Walters, Kimura, Motoda, Inc.
1148 Third Avenue
Honolulu, Hawaii 96816

Attention: Mr. Irvin T. Higashi

Subject: Phase I Environmental Site Assessment
TMK (1) 9-4-05: 74
Proposed Waiola Regional Park and Sports Complex
Waipio, Oahu, Hawaii

Dear Mr. Higashi:

Masa Fujioka & Associates (MFA) has performed a Phase I Environmental Site Assessment (ESA) of the subject property. The purpose of this investigation was to evaluate the presence or likely presence of materials, considered hazardous to human health and the environment, that may impact the property.

Our Phase I ESA was conducted in accordance with the scope of work contained in our proposal, dated March 11, 1998. A Phase I ESA comprises a number of individual elements whose basic nature and extent are determined in accordance with the standard of care applicable to Phase I ESAs. The standard of care is commonly defined as the care applied by the ordinary practitioner at the time and in the area where the ESA was performed. We believe that we have complied with the applicable standard of care within the limits of our scope of service described in our proposal and repeated below.

The accompanying report is an instrument of service of MFA. The report summarizes our findings and relates our opinions with respect to the site history and potential sources of contamination at the site. Note that our findings and opinions are based on information that we obtained on given dates, through records review, site review, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions we observed to have changed after our observation. For these and associated reasons, MFA and many of its peers routinely advise clients for ESA services that it would be a mistake to place unmerited faith in findings and opinions conveyed via ESA reports. MFA cannot under any circumstances warrant or guarantee that not finding indicators of hazardous materials means that hazardous materials do not exist on the site.

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
TMK (1) 9-4-05: 74
PROPOSED WAIOLA REGIONAL PARK
AND SPORTS COMPLEX
WAIPIO, OAHU, HAWAII

MAY 27, 1998

MASA FUJIOKA & ASSOCIATES
Job Number 98231-004



MASA FUJIOKA & ASSOCIATES

A PROFESSIONAL PARTNERSHIP

ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Walters, Kimura, Motoda, Inc.
May 27, 1998
Page 2

It has been a pleasure performing this assessment for you. Please contact us at 484-5366 if you have questions regarding this report.

Respectfully submitted,

MASA FUJIOKA & ASSOCIATES
A Professional Partnership

Masanobu R. Fujioka, P.E.
Principal-In-Charge

Two (2) copies submitted

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT
 TMK (1) 9-4-05: 74
PROPOSED WAIOLA REGIONAL PARK
AND SPORTS COMPLEX
WAIPIO, OAHU, HAWAII

1.0 INTRODUCTION

1.1 OVERVIEW

This report presents the results of Masa Fujioka & Associates' (MFA's) Phase I Environmental Site Assessment (ESA) for the subject property. The general location of the site is shown on Figure 1 (Map of Area).

Our work was performed as summarized in our proposal, dated March 11, 1998, which constitutes the contractual agreement between MFA and Walters, Kimura, Motoda, Inc. for the services provided. Our Phase I investigation was performed in accordance with the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM Designation E1527).

1.2 PURPOSE AND SCOPE OF WORK

MFA conducted this ESA to evaluate whether materials considered to be hazardous to human health and the environment, present on the property or in the surrounding area, may impact the subject property. We conducted the environmental assessment using available information sources with the potential to identify past or on-going problems at the property. We performed the following tasks in our ESA:

- **Review of site history.** MFA examined readily available documents, consisting of site plans, previous environmental reports, building permit records, insurance maps, topographic maps, and aerial photographs.
- **Review of regulatory records.** We examined government records regarding environmental conditions, citations, complaints, and permits at the site and at neighboring properties. We reviewed records from or contacted the following agencies: EPA, State of Hawaii Department of Health (DOH) Hazardous Waste Program, DOH Underground Storage Tank (UST) Program, DOH Underground Injection Control Program, DOH Hazard Evaluation and Emergency Response (HEER) Program, and Hawaiian Electric Company.
- **Site reconnaissance.** We performed a site reconnaissance of the property to note visual signs of contamination, interview available site personnel, and

conduct a brief assessment of neighboring properties. During our site reconnaissance we specifically looked for stained soil, dead or stressed vegetation, hazardous materials, electrical transformers and capacitors, above ground and underground storage tanks, disposal areas, maintenance areas, groundwater wells, sumps, storm drains, and cesspools/sewers.

- Review of site geology and hydrogeology. We reviewed readily available published information on surface and subsurface conditions at the site and surrounding area. We used this information to assess topography, drainage, surface water bodies, anticipated subsurface geology, and groundwater occurrence and usage in the area.
- Data evaluation and report preparation. We evaluated the information collected and prepared this report documenting our assessment and providing our conclusions.

1.3 SPECIAL TERMS AND CONDITIONS

Walters, Kimura, Motoda, Inc. contracted MFA to perform this Phase I ESA. The ESA was conducted and this report was prepared for the sole use of Walters, Kimura, Motoda, Inc. and the City & County of Honolulu. This report shall not be relied upon by or transferred to any other party without express written authorization from MFA.

1.4 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

Phase I ESAs, by their very nature, are limited. MFA has endeavored to meet what it believes is the applicable standard of care and, in so doing, is obliged to advise Walters, Kimura, Motoda, Inc. of Phase I ESA limitations. This ESA did not include any investigation with respect to site geotechnical concerns, and did not include any investigation with respect to asbestos, lead paint, radon, or methane. No subsurface environmental investigation or sampling was performed. Our investigation was limited to the procedures described in the Phase I ESA Standard Practice (ASTM, 1994).

MFA has made one exception to the Phase I ESA procedures specified by ASTM E1527. Because the State of Hawaii does not compile a list of hazardous waste sites identified for investigation or remediation (NPL or CERCLIS equivalents), we are unable to include such a list in our records review. We reviewed the DOH HEER Sites of Interest Database instead (see section 3.1.4)

We note that due to the dense nature of the vegetation, we were unable to access or observe the entire surface area of the site. While we did access areas such as roadways, trails, and clearings, where disposal of hazardous materials

could have occurred, such items may be located beneath dense vegetation in other areas.

1.5 LIMITING CONDITIONS

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and our interpretation of the available historical and regulatory information and documents reviewed. They are intended exclusively for the purpose outlined herein and apply only to the site location and project indicated. This report is intended for the sole use of Walters, Kimura, Motoda, Inc. and the City & County of Honolulu. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings and conclusions presented herein is at the sole risk of said user.

Opinions presented herein apply to site conditions existing at the time of our investigation and those reasonably foreseeable; they cannot necessarily apply to site changes of which this office is not aware and has not had the opportunity to evaluate.

2.0 SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The subject site is located at 94-2689 Paiwa Street (temporary address) in the Waipio area of Oahu (see Figure 1). According to information supplied by Mr. Vince Ng of Walters, Kimura, Motoda, Inc., the subject site consists of Tax Map Key 9-4-05: Parcel 74 (see Figure 2). Castle & Cooke Homes Hawaii, Inc. is listed as the owner of this parcel (C&C, 1998a).

2.2 SITE AND VICINITY CHARACTERISTICS

The subject site is located in central Oahu on the Schofield Plain, approximately 8,500 feet northwest of Pearl Harbor, Middle Loch. The site is currently fallow agricultural land, previously used to grow pineapple and sugarcane. Rainfall in the site area is typically less than 39 inches per year (DLNR, 1986).

U.S. Naval Magazine Lualualei, Waikele Branch (including Kipapa Gulch) is located west and north of the site; Hawaii Okinawa Center, McDonald's, Waipio Gentry residential area, Waipio Shopping Center, and Crestview residential area are located east of the site (across Kamehameha Highway); and Waikele residential area is located south of the site (see Figure 3).

2.3 DESCRIPTIONS OF STRUCTURES AND OTHER IMPROVEMENTS ON THE SITE

The site layout is presented in Figure 3 (Site Map). The site is fallow agricultural land. Vegetative debris from previous pineapple cultivation remains in neat rows on the majority of the site. Six-foot-tall, grassy vegetation covers the southern portion of the site, nearest to the Waikele residential area. There are two irrigation ditches, which are stone lined portions of the Waiahole Irrigation Ditch (PlanPacific, 1998), that run north-south and east-west. An overhead 46Kv subtransmission power line (PlanPacific, 1998) follows the east-west irrigation ditch. Two Board of Water Supply (BWS) reservoir tanks are located on a northwest portion of the site, this parcel is owned by BWS. A pump house is located just east of the two BWS reservoir tanks.

A residence was observed on the western edge of the site. At the time of this report, it was not clear if this residence was located on the subject site or on the neighboring U.S. Navy property. The U.S. Navy is surveying their property to determine where this residence is located.

2.4 ENVIRONMENTAL LIENS OR SPECIALIZED KNOWLEDGE OR EXPERIENCE

Ms. Beverly Kaku, a Land Agent at Castle and Cooke, and Mr. Francisco Angara, Jr., the Manager of Agricultural Operations for Dole Food Company Hawaii (Dole), both reported that they knew of no environmental liens on the subject site.

2.5 CURRENT USES OF THE PROPERTY

The property is currently fallow agricultural land.

2.6 PAST USES OF THE PROPERTY

Information regarding past uses of the subject site was obtained from interviews and our review of aerial photographs, U. S. Geological Survey (USGS) topographic maps, and the Draft Environmental Impact Statement (PlanPacific, 1998).

Aerial photographs from 1952, 1959, 1962, 1968, and 1992 show the property in agricultural use. Ms. Beverly Kaku, the Land Agent for Castle and Cooke, reported that Castle and Cooke obtained the property in the 1940's/50's. The site was used as agricultural land for sugarcane and for pineapple (PlanPacific, 1998).

2.7 CURRENT AND PAST USES OF ADJOINING PROPERTIES

The northern and western boundaries of the property are adjacent to the Kipapa Gulch which is approximately 200 to 100 (north to south) feet lower in elevation than the subject site. The Waikele Branch Naval Magazine is located along the stream bed to the north and west of the site. Kamehameha Highway borders the site to the east. The Waipio Gentry and Crestview residential developments are located across Kamehameha Highway. The Waikele residential development borders the southern portion of the site.

Based on aerial photographs, the adjoining residential developments were previously used as agricultural land and the stream bed of Kipapa Gulch has been used by the military since before 1952, as shown in the earliest aerial photo of the project vicinity available.

3.0 RECORDS REVIEW

3.1 STANDARD ENVIRONMENTAL RECORD SOURCES

3.1.1 Overview

MFA used a regulatory database search service, VISTA Information Solutions, Incorporated, to review standard federal and state government databases of known or potential sources of hazardous materials or waste. The site assessment report provided to MFA by VISTA is included in the Appendix.

MFA reviewed the VISTA site assessment report and performed further inquiries as needed. We also reviewed the State of Hawaii DOH Hazardous Waste Sites of Interest database, which was not included in the VISTA site assessment.

ASTM E1527 specifies a minimum search distance for specific environmental record sources. The following record sources were searched for incidents or sites within one (1) mile of the subject property:

- (1) Federal NPL (National Priorities List);
- (2) Federal RCRA (Resource Conservation and Recovery Act) TSD (treatment, storage, and/or disposal) facilities; and
- (3) State hazardous waste sites (NPL or CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) equivalents).

In accordance with ASTM E1527, the following record sources were searched for incidents or sites within one-half (0.5) mile of the subject property:

- (1) Federal CERCLIS list (Comprehensive Environmental Response, Compensation and Liability Information System);
- (2) State landfill and/or solid waste disposal sites; and
- (3) State leaking UST (underground storage tank) list.

In accordance with ASTM E1527, the following record sources were searched for incidents on the subject property and adjoining properties:

- (1) Federal RCRA generators list; and
- (2) State registered UST (underground storage tank) list.

In accordance with ASTM E1527, the following record source was searched for incidents on the subject property:

- (1) Federal ERNS (emergency response notification system) list.

3.1.2 U. S. EPA National Priorities List (NPL)

The NPL is a list of properties with the highest priority for cleanup under the U. S. Environmental Protection Agency (EPA) Hazard Ranking System (40 CFR Part 300). The list (EPA, 1998a) is compiled by the EPA pursuant to CERCLA 42 USC §9605 (a)(8)(B). VISTA found no NPL sites listed within one (1) mile of the subject site (VISTA, 1998).

3.1.3 U. S. EPA RCRA TSD Facilities List

The RCRA list is compiled by the EPA (EPA, 1997a) and contains those regulated facilities that have notified EPA as hazardous waste generators, transporters or treatment, storage or disposal facilities under RCRA. TSD facilities are those facilities on which treatment, storage, and/or disposal of hazardous wastes takes place, as defined and regulated by RCRA. VISTA found no RCRA TSD facilities listed within one (1) mile of the subject site (VISTA, 1998).

3.1.4 State of Hawaii DOH Hazardous Waste Sites

The DOH HEER office maintains a Sites of Interest Database, which includes sites that HEER has earmarked for additional investigation, for the period of available record (January 1992 to November 1997). We searched the database (DOH, 1997) for incidents within one (1) mile of the subject site.

We found one site listed in the Sites of Interest Database to be within one (1) mile of the subject site. The Waipio Heights Wells II, located approximately 200 feet cross-gradient of the subject site, is listed as having one well contaminated by legal application of pesticides and has a "No Further Action" rating. The database lists the following events at this facility: discovery occurred on February 1, 1984; initial screening site inspection, preliminary site assessment, and hazard ranking/NPL listing was completed on April 1, 1984; and removal from the proposed NPL was completed on February 11, 1991.

3.1.5 U. S. EPA CERCLIS List

This list is compiled by EPA (EPA, 1998b) and contains sites that EPA has investigated or is currently investigating for potential hazardous substance contamination for possible inclusion on the NPL. VISTA found one CERCLIS site listed within one-half (0.5) mile of the subject site. This site is the Waipio Heights Wells II, discussed in section 3.1.4.

3.1.6 State of Hawaii Landfill / Solid Waste Disposal Sites

VISTA examined DOH Solid and Hazardous Waste Branch's list of permitted landfills in the State of Hawaii (DOH, 1998a) for landfills or disposal sites located within one-half (0.5) mile of the subject site. None of the permitted landfills on Oahu are within one-half (0.5) mile of the subject site.

3.1.7 State of Hawaii DOH Leaking UST List

This database is compiled by the State DOH Solid and Hazardous Waste Branch UST Section (DOH, 1998b). No leaking USTs (LUST) were listed within one-half (0.5) mile of the subject site (VISTA, 1998).

3.1.8 U. S. EPA RCRA Generators List

The RCRA database is compiled by the EPA (EPA, 1997a) and contains those regulated facilities that have notified the EPA as being hazardous waste generators, transporters or treatment, storage or disposal facilities under RCRA. TSD facilities were discussed in Section 3.1.3. No RCRA generators are listed adjacent to the subject property (VISTA, 1998).

3.1.9 State of Hawaii DOH UST Section Database Listing

This list is compiled by the State DOH Solid and Hazardous Waste Branch UST Section. VISTA searched the database (DOH, 1998c) and found no USTs located on the subject site. MFA found records of two USTs located west of the property at the Gas Express Station, in Waipio Gentry, at the intersection of Ka Uka Boulevard and Kamehameha Highway. Both USTs are reported to be 2,000-gallon gasoline USTs installed in October 1995 (DOH, 1998d). Both of these tanks were last inspected by DOH UST Section on August 4, 1997 and are not listed as leaking. We also found records of four USTs located across Kamehameha Highway at the Island Mini Mart on Ukee Street. Island Mini Mart has two 10,000 gallon gasoline USTs, one 10,000 gallon diesel UST, and one 5,000 gallon gasoline UST. They were installed on August 23, 1994 and tightness testing on

these USTs was successfully completed on September 24, 1997 (DOH, 1998e). None of the tanks have been reported as leaking.

3.1.10 U. S. EPA ERNS List

This list is compiled by the EPA (EPA, 1997b) and contains reported CERCLA hazardous substance releases or spills in quantities greater than the reportable quantity, as maintained at the National Response Center. VISTA examined this list, and found no reported incidents to have occurred on the subject site.

3.2 PHYSICAL SETTING SOURCES

3.2.1 USGS Topographic Maps

Topographic map coverage of the site vicinity is provided by the U. S. Geological Survey (USGS) Waipahu (USGS, 1983) quadrangle at a scale of 1:24,000. The center of the subject site is located at approximately 21°25'09" north latitude and 157°59'35" west longitude. The north end of the subject site sits at an elevation of less than 440 feet above mean sea level. The south end of the subject site sits at an elevation of less than 300 feet above mean sea level. The USGS topographic map does not show any structures on the subject site.

3.2.2 Current Land Use and Zoning

The subject site is zoned as a restricted agriculture district (AG-1). The intent of the AG-1 restricted agriculture district is to conserve and protect important agricultural lands for the performance of agricultural functions by permitting only those uses which perpetuate the retention of these lands in the production of food, feed, forage, fiber crops and horticulture plants (C&C, 1998b).

The site is not located in a flood zone (FIRM, 1987).

3.2.3 Geologic and Hydrogeologic Setting

MFA reviewed published geologic and hydrogeologic reports and maps to obtain information regarding subsurface conditions in the general area of the site.

Geology

The island of Oahu is of volcanic origin and was built by the Waianae and Koolau Volcanoes (MacDonald et al., 1983). The two ranges have lost most of their original shield outlines and are now long narrow ridges shaped largely by erosion. Lava flows from the Koolau volcano banked against the already-eroded slope of the Waianae volcano to form the gently sloping surface of the Schofield Plain (MacDonald et al., 1983). The site is located on the Schofield Plain.

The Schofield Plain is about 14 miles long and 5 miles wide and rises from the vicinity of sea level on the south and north sides to an altitude of about 1,000 feet at Schofield Barracks. Narrow canyons have been cut by Kipapa, Waikakaloa and Waikale Streams on the south side and Kaukonahua, Poamoho, and Opaepala Streams on the north side. Erosion of the interstream areas has been small and has proceeded downward by practically stripping layer by layer. Large dense boulders, erosional remnants of the massive part of lava flows, can be found on the surface of the plain (Stearns and Vaksvik, 1935).

The weathering of the basalt on the plateau has reached depths of 50 to 100 feet, and in most places there is 5 to 10 feet of soil cover. The surface of the plain consists of dark-brown alluvial soils and red lateritic residual soils (Stearns and Vaksvik, 1935).

Soils

According to the U.S. Soil Conservation Service (Foote et al., 1972), there is one soil type at the site, subdivided into three classifications based on slopes. These three soil classifications at the site are Molokai silty clay loam; 3 to 7 percent slopes (MuB), 7 to 15 percent slopes (MuC), and 15 to 25 percent slopes (MuD). The Molokai Series consists of well-drained soils on uplands on the islands of Maui, Lanai, Molokai, and Oahu (Foote et al., 1972). The following table provides a description of each type of Molokai silty clay loam described to occur at the site.

Table 1. Soil Description for Soils at Site

Soil Type	Slope	Runoff Rate	Erosion Hazard	Use
MuB	3 to 7%	slow to medium	slight to moderate	sugar cane, pineapple, pasture, wildlife habitat, and home sites
MuC	7 to 15%	medium	moderate	sugar cane, pineapple, pasture, wildlife habitat, and home sites
MuD	15 to 25%	medium	severe	sugar cane and pineapple

Hydrogeology

The natural regional hydraulic gradient of groundwater at the site would normally be south-southwest towards Pearl Harbor. Springs around Pearl Harbor serve as the natural exit point for groundwater flow within the basalts of this area, except for groundwater intercepted by wells.

Two municipal wells are located to the east of the site, in the Waipio residential area across Kamehameha Highway. These wells would likely impact local groundwater flow around each well, and would be expected to have little impact on the regional groundwater flow.

Groundwater resources in the area are listed as being in the Pearl Harbor aquifer system of the Waipahu and Waiawa aquifer sector. According to Mink and Lau (1990), two aquifers underlie the site.

The first aquifer is located beneath the majority of the site and is part of the Waipahu aquifer sector. The second aquifer is located beneath the southeast tip of the site (approximately 0.2 acres) and is part of the Waiawa aquifer sector. Both aquifers are listed as unconfined (where the water table is the upper surface of the saturated aquifer), basal (fresh water in contact with sea water), and occurring in flank lavas. The aquifers are described to be currently in use as fresh (<250 mg/L Cl⁻) drinking water sources, and are listed as having a high vulnerability to contamination and as irreplaceable (Mink and Lau, 1990).

The site is located above the Underground Injection Control (UIC) line (DOH, 1983).

3.3 HISTORICAL USE INFORMATION

3.3.1 Historical Topographic Maps

Topographic map coverage of the subject site and its immediate vicinity is provided by the United States Geological Survey (USGS). The maps for the years 1909-1913, 1927-1930, 1943, 1944, 1954, 1968, 1978, and 1983 were examined for past topographic, cultural, and land use changes within the area which may have impacted site conditions.

The site area appears undeveloped in all six of the available maps. The 1909-1913 and 1927-1930 map shows the site and vicinity as agricultural land, with a reservoir at the southern border of the site. The 1943 map shows railroad tracks through the southern portion of the site, near the reservoir. The 1944 and 1954 maps do not show the railroad tracks and the site vicinity is still undeveloped. The 1968 map shows the beginning of the Crestview residential development to the southeast of the site. The 1978 map shows a completed

Crestview residential development, the beginning of the Waipio Gentry residential development, a pump house on site, a reservoir on the southern border of the site, and the completed H-1 and H-2 Freeways. The 1983 map is the same as the 1978 map with the exception that the Waiahole Ditch system is shown.

3.3.2 Sanborn Fire Insurance Maps

Sanborn Fire Insurance map coverage of the site and its immediate vicinity was reviewed for the years 1917, 1927, 1947, 1951, and 1955. Sanborn Fire Insurance maps for Oahu do not include the subject site.

3.3.3 Aerial Photographs

A review was conducted of readily available published aerial photographs of the site and vicinity. Aerial photographs from 1952 (USGS), 1959 (USGS), 1962 (Dept. of Agriculture), 1968 (USGS), and 1992 (NASA) were reviewed. The available aerial photographs show the project area as agricultural land. The adjacent land was also shown as developed for agricultural use in all photographs except the 1992 photograph. The Waikele Naval Magazine was shown on all the photographs except in the 1962 photograph (area blacked out). The 1992 photograph shows the Waipio Gentry and Crestview residential areas completed; the southern portion of the Waikele residential development completed; one BWS tank present on the site; and the reservoir at the southern portion of the site is dry.

4.0 INFORMATION FROM SITE RECONNAISSANCE

4.1 HAZARDOUS SUBSTANCES, WASTES AND MATERIALS

During our site visits on April 28, 1998 and May 11, 1998, we observed potentially hazardous materials on the subject property. A 55-gallon drum was observed on the east side of the site, near Kamehameha Highway (see Plate 2). Dumped waste was observed in various locations on the subject site (see Figure 3 and section 4.4). Some of the waste was comprised of household waste (including used appliances), abandoned cars, car parts, and used tires. We also observed some items that may contain asbestos, i.e., a transite pipe, a pile of ceiling tile, and a pile of roofing debris.

Based on information provided by Mr. Angara of Dole, herbicides, pesticides, insecticides, nematicides, fungicides, and growth regulators were used in past onsite agricultural production according to the label instructions. Applied fertilizers consisted of a urea/ammonium/nitrate solution. Dole records show that the last application of chemicals was in 1992 and the last harvest at the site was in 1997. The table below lists the chemicals that were used at the site, based on information supplied by Dole.

Table 2. Agricultural Chemicals Used at Site

Chemical Type	Trade Name	Manufacturer
Insecticide	Clean Crop	Platte Chemical Co.
Nematicide	Telone II	DowElanco
Fungicide	ALLETTE®	Rhone-Poulenc AG Company
Herbicide	Evik®80W	CIBA-GEIGY
Herbicide	HYVAR®	Du Pont
Herbicide	Oxy Diuron 80 W	Occidental Chemical Company
Herbicide	VELPAR®	Du Pont
Growth Regulator	ETHREL®	Rhone-Poulenc AG Company
Growth Regulator	MAINTAIN® CF125	UNIROYAL

4.2 STORAGE TANKS

No storage tanks were observed on the subject site and historical information does not indicate past storage tanks on the property. Gas Express #65, located across Kamehameha Highway at 94-1082 Ka Uka Boulevard, has two 12,000-gallon gasoline underground storage tanks which were installed in October 1995 and were last inspected by the DOH UST representative on August 4, 1997 (DOH, 1998d). Island Mini Mart, located across Kamehameha Highway at 94-826 Ukee Street, has two 10,000-gallon gasoline USTs, one 10,000-gallon diesel UST, and one 5,000-gallon gasoline UST. They were installed on August 23, 1994 and tightness testing on these USTs was successfully completed on September 24, 1997 (DOH, 1998e). None of these tanks have been reported as leaking.

4.3 INDICATIONS OF PCBs

We observed one transformer on a platform on the east side of the subject property, near Kamehameha Highway. There were no visible signs of leakage. We also observed several transformers to the east of the subject property along Ka Uka Boulevard, Ukee Street, and Waipio Uka Boulevard. There were no visible signs of leakage from any of these transformers. We requested information from HECO regarding these transformers and received the following information (HECO, 1998).

Table 3. HECO Transformer PCB Information

Street Location	Transformer ID	Date Purchased	Date Installed	PCB Status
94-2689 Palwa St.	51916	4/87	4/87	PCB-free
Waipio Uka Blvd.	4653	4/96	5/96	PCB-free
Ukee St. (Island Mini Mart)	5818	2/96	1/97	PCB-free
Kaukahi Pl.	5465	11/83	12/83	non-PCB
Ka Uka Blvd. (Waipio Industrial Court)	6069	4/89	8/89	PCB-free
Ka Uka Blvd. (Public Storage)	5813	12/86	3/87	PCB-free
Ka Uka Blvd. (west of Zippy's)	7699	98	98	PCB-free
Ka Uka Blvd. (west of Zippy's)	4716	4/90	4/91	PCB-free
Ka Uka Blvd. (west of Zippy's)	4717	customer owned	customer owned	*
Ka Uka Blvd. (Handi Pantry)	4768A	5/81	2/82	non-PCB
Ukee St. (L&L Chopsticks)	5715	1/86	5/86	PCB-free
Ukee St. (Jack-In-The-Box)	5570	11/91	1/93	PCB-free

* = PCB data is not available.

4.4 INDICATIONS OF SOLID WASTE DISPOSAL

There were indications of solid waste disposal on the site. The waste was comprised of household waste (including used appliances), tree cuttings, abandoned cars, car parts, roofing debris, broken PVC irrigation piping, piles of asphalt & concrete debris, used tires, ceiling tiles, and concrete with rebar fence posts. Descriptions, locations, and photographs of dumped waste are presented in Figure 3 and in Plates 1 through 5. The southern most portion of the site contains numerous piles of asphalt, construction debris, and wood from railroad tracks hidden by tall grass and overgrown vegetation.

4.5 PHYSICAL SETTING ANALYSIS WITH RESPECT TO POTENTIAL MIGRATION

Our review of past land use indicated the site to have been under long term sugarcane and pineapple cultivation. Pineapple cultivation by Dole Food Company Hawaii included the use of herbicides, pesticides, insecticides, nematocides, fungicides, and growth regulators. Herbicide, pesticide, insecticide, nematocide, fungicide, and growth regulator residues, from application to pineapple at the site, could be present in the soil and groundwater beneath the site. However, when applied according to the label, herbicide, pesticide, insecticide, nematocide, fungicide, and growth regulator application for agricultural purposes is presently excluded from regulation under RCRA and CERCLA (Superfund), and does not result in a regulated hazardous waste.

4.6 OTHER CONDITIONS OF CONCERN

We observed a residence on the western edge of the site (see Figure 3). At the time of this report, it was not clear if this residence was located on the subject site or on the neighboring U.S. Navy property. The U.S. Navy is surveying their property to determine where this residence is located.

We did not perform asbestos sampling at the subject site. However, we observed some items that may contain asbestos, i.e., a transite pipe, a pile of ceiling tile, and a pile of roofing debris. Other potential asbestos-containing materials may be located in dense vegetation.

5.0 CONCLUSIONS

We have performed a Phase I Environmental Site Assessment of TMK (1) 9-4-05: parcel 74 in Waipio, Oahu, Hawaii, in accordance with the scope and limitations of ASTM Practice E 1527. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:

- Herbicide, pesticide, insecticide, nematicide, fungicide, and growth regulator residues, from application to sugarcane and pineapple at the site, could be present in the soil and groundwater beneath the site. However, if they were applied according to the label, and for agricultural purposes, they are presently excluded from regulation under RCRA and CERCLA (Superfund), and would not result in a regulated hazardous waste.
- We observed solid waste dumping at the site. We found household waste (including used appliances), tree cuttings, abandoned cars, car parts, roofing debris, broken PVC irrigation piping, asphalt piles, used tires, concrete piles, ceiling tiles, and concrete with rebar fence posts. The southern most portion of the site contains numerous piles of asphalt, construction debris, and wood from railroad tracks hidden by tall grass and overgrown vegetation.
- We observed the presence of potentially hazardous materials/wastes at the subject site during our site visit. Used tires, drums, household waste, abandoned cars, car parts, and various construction debris were observed on the site. A transite pipe, a pile of ceiling tile, and a pile of roofing debris, which may contain asbestos, were observed on the site.
- We note that due to the dense nature of the vegetation, we were unable to access or observe the entire surface area of the site. While we did access areas such as roadways, trails, and clearings, where disposal of hazardous materials could have occurred, such items may be located beneath dense vegetation in other areas. Should potentially hazardous materials be found during clearing and grading of this site, the disposition of such materials should be discussed with an environmental consultant.
- Additional investigation with respect to pesticide and solid/hazardous waste issues is recommended. Our recommendations for Phase II actions are submitted as a separate letter.

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APPENDIX G
CZM ASSESSMENT AND SUPPLEMENTAL INFORMATION FORM

CZM ASSESSMENT AND
SUPPLEMENTAL INFORMATION FORM

Instructions for Preparing an Assessment

1. Review the HCZMP objectives and policies and identify those relevant to the proposed activity

The Hawaii Coastal Zone Management Program (HCZMP) objectives and policies of Section 205A-2, Hawaii Revised Statutes, are listed on the assessment form.

Questions are presented in each resource group to help identify the relationship of a proposed activity to the objectives and policies. They are intended only as guides to understanding the objectives and policies. There may be other relevant concerns not listed in the form. If a particular resource group does not appear to be relevant, the applicant may indicate "not applicable" in the discussion section.

2. Prepare discussion

The proposed activity's effects on Hawaii's coastal zone should be discussed in terms of how they either further or conflict with the objectives and policies. It is most important to discuss all of the applicable objectives and policies.

Sections of an Environmental Impact Statement, Environmental Impact Assessment, or other supplementary material which provide supporting data and information may be cited by reference and attached to the discussion. For example, if an Environmental Assessment describes impacts on scenic resources, the CZM Assessment Form would indicate the appropriate pages under the discussion section.

Supporting Network of Policies and Mandates

The HCZMP is a networked program. That is, a network of statutes, ordinances, rules, and regulations are incorporated into the program as the primary means of carrying out the CZM objectives and policies. They are used to administer and enforce land and water use regulations in conformance with the CZM objectives and policies; to control uses, areas, and developments subject to the management program; and to resolve conflicts among competing uses. An assessment of a proposed activity's consistency with the HCZMP should include a discussion of the relevant network authorities cited in the approved Hawaii Coastal Zone Management Program and Final Environmental Impact Statement.

First, if any land and water use permission which directly implements the CZM objectives and policies is required for a proposed activity, information regarding the status of the application should be provided. Of particular importance are the following:

1. Special Management Area use permit;
2. Shoreline Setback Variance;

3. Conservation District Use permit;
4. State Land Use District Boundary Amendments;
5. Shorewaters Construction permit; and
6. State Department of Health permits and approvals, including, but not limited to, National Pollutant Discharge Elimination System permits and zone of mixing approvals.

Secondly, if a proposed activity affects coastal resources or areas for which an agency administers a State policy incorporated in the network, efforts to consult with the responsible agency should be described in the assessment.

For example, if a site listed on the State Register of Historic Places will be affected, the discussion under Historic Resources should include information on the consultation with the State Historic Preservation Officer. Similarly, if a proposed activity is contingent upon the State environmental review process under Chapter 343, the status or results of that process should be discussed under the Managing Development section. If fish or marine mammals within the State's waters will be affected, evidence of coordination with the State's Division of Aquatic Resources should be provided in the Coastal Ecosystems section.

Since the Federal consistency review process promotes continued coordination of State and Federal interests and allows early consultation on activities, this information will be helpful in minimizing and resolving conflicts.

J. Sign and submit completed forms with other required information

The CZM Assessment Form and Supplemental Information Form should be reproduced and submitted with the other required information to the DPED. The consistency statement should be signed if the activity involves a Federal permit or Federal agency activity.

HAWAII CZM PROGRAM
ASSESSMENT FORM

RECREATIONAL RESOURCES

Objective: Provide coastal recreational opportunities accessible to the public.

Policies

- 1) Improve coordination and funding of coastal recreation planning and management.
- 2) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
 - a) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
 - b) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
 - c) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
 - d) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
 - e) Encouraging expanded public recreational use of County, State, and Federally owned or controlled shoreline lands and waters having recreational value;
 - f) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
 - g) Developing new shoreline recreational opportunities, where appropriate, such as artificial reefs for surfing and fishing; and
 - h) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, County planning commissions; and crediting such dedication against the requirements of section 46-6.

Check either "Yes" or "No" for each of the following questions.

- | | <u>Yes</u> | <u>No</u> |
|---|------------|-----------|
| 1. Will the proposed action involve or be near a dedicated public right-of-way? | — | <u>X</u> |
| 2. Does the project site abut the shoreline? | — | <u>X</u> |
| 3. Is the project site near a State or County park? | — | <u>X</u> |
| 4. Is the project site near a perennial stream? | — | <u>X</u> |
| 5. Will the proposed action occur in or affect a surf site? | — | <u>X</u> |
| 6. Will the proposed action occur in or affect a popular fishing area? | — | <u>X</u> |
| 7. Will the proposed action occur in or affect a recreational or boating area? | — | <u>X</u> |
| 8. Is the project site near a sandy beach? | — | <u>X</u> |
| 9. Are there swimming or other recreational uses in the area? | — | <u>X</u> |

Discussion

HISTORIC RESOURCES

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies

- 1) Identify and analyze significant archaeological resources;
- 2) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- 3) Support State goals for protection, restoration, interpretation, and display of historic resources.

Check either "Yes" or "No" for each of the following questions.

- | | <u>Yes</u> | <u>No</u> |
|--|------------|-----------|
| 1. Is the project site within a historic/cultural district? | — | <u>X</u> |
| 2. Is the project site listed on or nominated to the Hawaii or National register of historic places? | — | <u>X</u> |
| 3. Does the project site include undeveloped land which has not been surveyed by an archaeologist? | — | <u>X</u> |
| 4. Has a site survey revealed any information on historic or archaeological resources? | — | <u>X</u> |
| 5. Is the project site within or near a Hawaiian fishpond or historic settlement area? | — | <u>X</u> |

Discussion

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies

- 1) Identify valued scenic resources in the coastal zone management area;
- 2) Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;
- 3) Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources; and
- 4) Encourage those developments which are not coastal dependent to locate in inland areas.

Check either "Yes" or "No" for each of the following questions.

	<u>Yes</u>	<u>No</u>
1. Does the project site abut a scenic landmark?	—	<u>X</u>
2. Does the proposed action involve the construction of a multi-story structure or structures?	<u>X</u>	—
3. Is the project site adjacent to undeveloped parcels?	<u>X</u>	—
4. Does the proposed action involve the construction of structures visible between the nearest coastal roadway and the shoreline?	—	<u>X</u>
5. Will the proposed action involve construction in or on waters seaward of the shoreline? On or near a beach?	—	<u>X</u>

Discussion

- 2. The proposed baseball stadium and tennis stadium are designed as multi-story structures. These facilities, however, are designed within the interior of the park and will not be visible from the highway.
- 3. The proposed project site is surrounded by Kipapa Gulch and agricultural fields to the west and north. The remaining adjacent areas consist of residential communities, with the Mililani community located further north, the Waipio and Crestview communities located east, and the Waikole community located south of the site. The proposed project will not adversely impact the quality of coastal scenic or open space resources.

COASTAL ECOSYSTEMS

Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies

- 1) Improve the technical basis for natural resource management;
- 2) Preserve valuable coastal ecosystems of significant biological or economic importance;
- 3) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land water uses, recognizing competing water needs; and
- 4) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

Check either "Yes" or "No" for each of the following questions.

	<u>Yes</u>	<u>No</u>
1. Does the proposed action involve dredge or fill activities?	—	<u>X</u>
2. Is the project site within the Shoreline Setback Area (20 to 40 feet inland of the shoreline)?	—	<u>X</u>
3. Will the proposed action require some form of effluent discharge into a body of water?	—	<u>X</u>
4. Will the proposed action require earthwork beyond clearing and grubbing?	<u>X</u>	—
5. Will the proposed action include the construction of special waste treatment facilities, such as injection wells, discharge pipes, or cesspools?	—	<u>X</u>
6. Is an intermittent or perennial stream located on or near the project site?	—	<u>X</u>
7. Does the project site provide habitat for endangered species of plants, birds, or mammals?	—	<u>X</u>
8. Is any such habitat located nearby?	—	<u>X</u>
9. Is there a wetland on the project site?	—	<u>X</u>
10. Is the project site situated in or abutting a Natural Area Reserve?	—	<u>X</u>

11. Is the project site situated in or abutting a Marine Life Conservation District? X
12. Is the project site situated in or abutting an estuary? X

Discussion

4. Some earthwork will be required to level the proposed playing fields and construct the foundation for the proposed structures. However, these activities will not adversely impact any coastal ecosystems.

ECONOMIC USES

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies

- 1) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;
- 2) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- 3) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - a) Utilization of presently designated locations is not feasible;
 - b) Adverse environmental effects are minimized; and
 - c) Important to the State's economy.

Check either "Yes" or "No" for each of the following questions.

- | | <u>Yes</u> | <u>No</u> |
|---|---------------|---------------|
| 1. Does the project involve a harbor or port? | <u> </u> | <u> X </u> |
| 2. Is the project site within a designated tourist destination area? | <u> </u> | <u> X </u> |
| 3. Does the project site include agricultural lands or lands designated for such use? | <u> X </u> | <u> </u> |
| 4. Does the proposed activity relate to commercial fishing or seafood production? | <u> </u> | <u> X </u> |
| 5. Does the proposed activity relate to energy production? | <u> </u> | <u> X </u> |
| 6. Does the proposed activity relate to seabed mining? | <u> </u> | <u> X </u> |

Discussion

3. The loss of the subject parcel from agricultural use will be permanent and irreplaceable upon development of the proposed project. Although the site was once used for sugar cultivation and then later converted to pineapple cultivation, the project site is currently fallow. However, conversion of the land to urban use will not affect overall agricultural production or jobs in the long term since sugar is no longer being cultivated on Oahu, and other surplus agricultural lands have been converted for pineapple cultivation. In addition, the site's proximity to the suburban communities of Central Oahu and its physical separation from other agricultural lands (due to Kipapa Gulch) make it an attractive open space buffer between residential communities and agricultural activities.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies

- 1) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;
- 2) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;
- 3) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- 4) Prevent coastal flooding from inland projects.

Check either "Yes" or "No" for each of the following questions.

	<u>Yes</u>	<u>No</u>
1. Is the project site on or abutting a sandy beach?	—	<input checked="" type="checkbox"/>
2. Is the project site within a potential tsunami inundation area as depicted on the National Flood Insurance Program flood hazard map?	—	<input checked="" type="checkbox"/>
3. Is the project site within a potential flood inundation area according to a flood hazard map?	—	<input checked="" type="checkbox"/>
4. Is the project site within a potential subsidence hazard area according to a subsidence hazard map?	—	<input checked="" type="checkbox"/>
5. Has the project site or nearby shoreline areas experienced shoreline erosion?	—	<input checked="" type="checkbox"/>

Discussion

MANAGING DEVELOPMENT

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies

- 1) Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;
- 2) Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and
- 3) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Check either "Yes" or "No" for each of the following questions.

	<u>Yes</u>	<u>No</u>
1. Will the proposed activity require more than two (2) permits or approvals?	—	<input checked="" type="checkbox"/>
2. Does the proposed activity conform with the State and County land use designations for the site?	—	<input checked="" type="checkbox"/>
3. Has or will the public be notified of the proposed activity?	<input checked="" type="checkbox"/>	—
4. Has a draft or final environmental impact statement or an environmental assessment been prepared?	<input checked="" type="checkbox"/>	—

Discussion

- 2. A change in the State Land Use District will be required for the proposed sports complex. A Land Use District Boundary Amendment application will be submitted to the Land Use Commission.

APPENDIX H
COMMENTS AND RESPONSES ON THE EIS PREPARATION NOTICE

Comments Received on the Environmental Impact Statement Preparation Notice

AGENCY/ORGANIZATION	DATE OF LETTER	AGENCY/ORGANIZATION	DATE OF LETTER
<u>City and County of Honolulu</u>		Energy Office	---
Board of Water Supply	---	Office of Environmental Quality Control	February 23, 1998
City Council, Parks and Human Services Committee	January 29, 1998	Office of Hawaiian Affairs	February 10, 1998
Department of Land Utilization	February 19, 1998	Office of Planning	February 20, 1998
Department of Parks and Recreation	---	Univ. of Hawaii at Manoa Environmental Center	---
Department of Public Works	February 13, 1998	Univ. of Hawaii at Manoa Water Resources Research Center	---
Department of Transportation Services	---	<u>United States</u>	
Department of Wastewater Management	February 23, 1998	Department of Agriculture	---
Mililani/Waipio/Melemanu Neighborhood Board No. 25	February 18, 1998	Army Corps of Engineers	---
Waipahu Neighborhood Board No. 22	---	Fish and Wildlife Service	---
Mililani Mauka Neighborhood Board	---	Natural Resources Conservation Service	---
Planning Department	February 23, 1998	<u>Other Organizations</u>	
Police Department	---	American Lung Association	---
<u>State of Hawaii</u>		Hawaii Audubon Society	---
Dept. of Business, Econ. Development & Tourism	---	Hawaiian Electric Company	---
Department of Education	February 11, 1998	Leeward Oahu Transportation Management Assoc.	February 24, 1998
Department of Health	---	Life of the Land	---
Department of Land & Natural Resources	---	Mililani Recreation Advisory Council	February 19, 1998
Department of Transportation	February 17, 1998	The Outdoor Circle	February 18, 1998
Land Use Commission	February 2, 1998	Sierra Club	---

¹ Italics represent comments received or postmarked after the May 7, 1998 comment deadline.



March 10, 1998

Mr. Randall Ogata, Administrator
Mr. Colin Kippen, Division Officer
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Re: **Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice**

Dear Messrs. Ogata and Kippen:

Thank you for your comments in your letter of February 10, 1998 regarding the Office of Hawaiian Affairs' concerns with the proposed regional park and sports complex. The Draft EIS will include a discussion of any potential adverse impacts to cultural and archaeological resources, ecosystems and associated wildlife habitats, air and water quality, and public health and safety. In addition, although the proposed project site is no longer used for agricultural production, the loss of agricultural lands is an important issue and will be discussed in the Draft EIS.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

717 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel: (808) 521-9410
Fax: (808) 521-9410

PHONE (808) 594-1888



FAX (808) 594-1865

STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPĪOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

FB

February 10, 1998

John Whalen
Plan Pacific, Inc.
737 Bishop Street
Suite 1520
Honolulu, HI 96813

DOC NO EIS-135

Subject: Environmental Impact Statement Preparation Notice for the Waiola Regional Park and Sports Complex.

Dear Mr. Whalen:

Thank you very much for your letter informing us of the upcoming Environmental Impact Statement Preparation Notice (EISPN) for the above-referenced project. The City and County of Honolulu proposes to acquire 269 acres in central Oahu and plans to develop a regional park and sports complex. The complex would include a baseball stadium, tennis courts, boxcar raceway, and aquatic center with a total estimated cost of \$45.9 million.

The Office of Hawaiian Affairs' (OHA's) main areas of concern for developments triggering an Environmental Impact Statement include, but are not limited to, potential adverse impacts to cultural and archaeological resources, ecosystems and associated wildlife habitats, air and water quality, and public health and safety. OHA's main concerns with regard to the proposed sports complex are the loss of prime agricultural lands, and the potential existence of archaeological resources.

At this time OHA has no objections to the EISPN. However, OHA intends to thoroughly review the Draft Environmental Impact Statement when it becomes available for public review.

Please contact Colin Kippen, Land and Natural Resources Division Officer, or Richard Stook, EIS Planner at 594-1755, should you have any questions regarding this matter.

Sincerely yours,

[Signature]
Randall Ogata
Administrator

[Signature]
for Colin Kippen, Division Officer,
Land and Natural Resources

cc: Board of Trustees



PLANPACIFIC

March 10, 1998

Ms. Rene Mansho, Chair
Parks and Human Services Committee
City Council
City & County of Honolulu
Honolulu, Hawaii 96813-3065

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Ms. Mansho:

Thank you for your comments in your letter of January 29, 1998 regarding traffic impact concerns with the proposed regional park and sports complex. A traffic study was conducted for the project and the results will be included in the Draft EIS. The study found that the park will not have a significant adverse impact on the regional roadway system.

The park's internal circulation plan is designed to help disperse traffic during peak periods of park usage on weekends and during special events. The road network allows access to the main parking area fronting Kamehameha Highway from all three entries (at Ka Uka Boulevard, Waipio Uka Boulevard and Paiwa Street). In addition, the Paiwa Street access, although gated during most of the park's operating hours - to prevent use of park circulation roads as *de facto* through-roads - may be opened for special events and on weekends.

With regard to a future through-road connection of Ka Uka Boulevard and Paiwa Street, although the proposed project includes reserving an easement for a future connector road, this road is not being proposed as part of the development, and it is not necessary for the adequate functioning of the park. The City and County will, however, be constructing the road at a later date, as a separate project under a separate environmental assessment.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

117 Bishop Street
Suite 1520
Honolulu,
Hawaii 96813

Tel: (808) 521-9218
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RENE MANSHO
COUNCILMEMBER, DISTRICT 1
1808 547-7001/Fax 546-1184
e-mail: rmansho@pand.com.hawaii.edu

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813-3065 / TELEPHONE 547-7000

January 29, 1998

Mr. John Whalen
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen: *John*

SUBJECT: Waiola Regional Park and Sports Complex

I am responding to a request for comments for the Environmental Impact Statement Preparation Notices (EISPN) which appeared in the January 23, 1997, (I assume that was a typographical error) issue of the Environmental Notice of the Office of Environmental Quality Control.

Concern has been expressed by members of the surrounding communities with regard to the impacts such a large facility will have due to the increased traffic and parking in the area. Of particular concern is the impact to park users and the immediate surrounding communities with traffic being diverted only onto Kamehameha Highway.

I am, therefore, requesting that a Regional Traffic Assessment be completed as soon as possible in order that the surrounding communities can be better informed as to what the traffic impacts will be with or without the Paiwa Street extension. Further, if it is determined that the Paiwa Street extension is necessary, what are the impacts to park users and the surrounding communities if that extension is constructed after the park is completed.

Sincerely,

Rene Mansho

RENE MANSHO
Chair, Parks and Human Services Committee

RAM:mh
waiola.c11

cc: Council Chair John DeSoto
Councilmember Mufi Hanneman
Pearl City Neighborhood Board
Mililani/Waipio/Melenanu Neighborhood Board
Mililani Mauka/Launani Valley Neighborhood Board
Waipahu Neighborhood Board



March 10, 1998

Dr. Jonathan K. Shimada
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Dr. Shimada:

Thank you for your comments in your letter of February 13, 1998 regarding drainage concerns with the proposed regional park and sports complex. The consultant team will prepare a drainage report for the department's review and approval. In addition, the Draft EIS will include a discussion of best management practices to reduce polluted runoff from the project site during and following construction.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9448

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

450 SOUTH KING STREET, 11TH FLOOR • HONOLULU HAWAII 96813
PHONE (808) 523-4341 • FAX (808) 527-2837

JEREMY HARRIS
MAYOR



February 13, 1998

JONATHAN K. SHIMADA, Ph.D.
DIRECTOR AND CHIEF ENGINEER
ROLAND O. LIBBI, JR.
REPORT DIRECTOR
ENV 98-042

Mr. John P. Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Environmental Impact Statement Preparation Notice
(EISPN) - Waiola Regional Park and Sports Complex
THK: 9-4-05: 74

We have reviewed the subject EISPN and have the following comments:

1. A drainage report should be submitted to the Drainage Section, Division of Engineering, for review and approval.
2. Page 7, Surface Water and Drainage: Address best management practices (BMPs) to reduce polluted runoff from the project site during construction and post-construction. The BMPs can be such as:
 - directing runoff from 270-stall parking lot to grassed swales or water quality inlets;
 - proper containment and monitoring use of fertilizer, pesticides and herbicides;
 - providing provisions for directing wash water of vehicles and other maintenance equipment to wastewater system; and
 - addressing maintenance responsibility of the diversion drainage channel adjacent to the Waiale development.

Should you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

Jonathan K. Shimada
JONATHAN K. SHIMADA, Ph.D.
Director and Chief Engineer



March 10, 1998

Mr. Kazu Hayashida, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. Hayashida:

Thank you for your comments in your letter of February 17, 1998 regarding traffic impact concerns with the proposed regional park and sports complex. A traffic study was prepared for the project and will be submitted for your department's review and approval. The study discusses traffic improvements and mitigation measures, and includes an implementation plan. The study also addresses impacts to Kamehameha Highway at the major intersections.

We understand that proposals for a connector road and park-and-ride facility will need to meet specific federal requirements and compete with other proposals prior to receiving any federal funds. As such, neither the connector road nor the park-and-ride facility are included as part of the proposed development. Easements for these two developments, however, are being reserved to ensure that these options will be available to the City and County in the future.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu, Hawaii 96813

Telephone: 521-9418
Fax: 521-9418

BENJAMIN J. CAYETANO
GOVERNOR



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

February 17, 1998

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRADLEY SHIMAZU
GLENN M. OKIMOTO

IN REPLY REFER TO:
STP 8.8407

Mr. John P. Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Waiola Regional Park and Sports Complex
Environmental Impact Statement Preparation Notice (EISPN)
Waipio, Oahu, Tax Map Key: 9-4-05: 74

Thank you for your transmittal of January 28, 1998, requesting our review of the subject document.

We have the following comments:

1. A Traffic Impact Analysis Report (TIAR) should be prepared and submitted for our review and approval. The TIAR should reflect existing and major planned developments in the region. The TIAR should identify traffic improvements and mitigation measures; and propose an implementation plan, as appropriate. The TIAR should also specifically address impacts to Kamehameha Highway at the intersections of Waipio Uka and Ka Uka Boulevards as well as impacts to the Paiva Interchange of the H-1 Freeway.
2. The assumption that the proposed connector road and park-and-ride facility will be federally funded is premature. These proposals will need to meet specific federal requirements to be considered for funding and compete with other proposals for the limited amount of available funds.

Thank you for the opportunity to comment.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation



March 10, 1998

Mr. Cliff LaBoy, Chair
Mililani Recreation Advisory Council
94-1150 Lanikuhana Avenue
Mililani, HI 96789

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. LaBoy:

Thank you for your comments in your letter of February 19, 1998 regarding traffic impact concerns with the proposed regional park and sports complex. A traffic study is being conducted for the project and the results will be included in the Draft EIS. Among other issues, the study will include estimates of vehicular traffic generated by the project and the potential impact this traffic will have on the existing circulation system and surrounding communities.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

PH (808) 521-9918
FX (808) 521-9960



February 19, 1998

Mr. John Whalen
PLANPACIFIC
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

SUBJECT: Waiola Regional Park and Sports Complex

This letter is in response to the Environmental Assessment and Preparation Notice (EISPN) for the proposed Waiola Regional Park.

The membership of the Mililani Recreation Advisory Council is made up of volunteers representing different community organizations within the Mililani community. During our last monthly meeting of January 27, 1998, the Mililani Recreation Advisory Council discussed the proposed Waiola Regional Park with regard to our support of the proposed project. It was determined that a Regional Traffic and Impact Assessment should be completed in order that the traffic needs are properly addressed in a timely manner.

Thank you for your consideration of our comments.

Sincerely,

Cliff LaBoy
Cliff LaBoy, Chair

cc: Mililani/Waipio/Melemanu Neighborhood Board
Mililani Mauka/Launani Valley Neighborhood Board
Councilmember Rene Mansho

Mililani Recreation Advisory Council

94-1150 Lanikuhana Avenue, Mililani, Hawaii 96789



March 10, 1998

Mr. Rick Egged, Director
Office of Planning
Department of Business, Economic Development & Tourism
State of Hawaii
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. Egged:

Thank you for your comments in your letter of February 20, 1998 regarding the proposed regional park and sports complex. The Draft EIS will include a discussion of the project's compliance with the Coastal Zone Management objectives and policies.

With regard to a future through-road connection of Ka Uka Boulevard and Paiwa Street, although the proposed project includes reserving an easement for a future connector road, this road is not being proposed as part of the development. The City and County will, however, be constructing the road at a later date, as a separate project under a separate environmental assessment.

The City and County will be consulting with your office and the Land Use Commission to determine whether a State Land Use District Boundary Amendment is required for the proposed project.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen, AICP

373 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel: (808) 521-9118
Fax: (808) 521-9168



DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Fl., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Ref. No. P-7209

February 20, 1998

Mr. John P. Whalen, AICP
Plan Pacific, Inc.
373 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Environmental Impact Statement Preparation Notice for the Waiola Regional Park and Sports Complex, Waipio, Oahu

This project involves the construction of several recreational and sports facilities involving over 269 acres of agricultural lands. As required by the Office of Environmental Quality Control's administrative rules, the environmental impact statement should discuss the project's compliance with the Coastal Zone Management (CZM) objectives and policies.

The impact of including or excluding the road connecting Ka Uka Boulevard and Paiwa Street on regional transportation patterns and flows should be fully evaluated.

In addition, the points raised in our March 7, 1997, letter to the Chief Planning Officer regarding the Development Plan Public Facilities Map Amendment for Central Oahu should also be addressed. Given the nature and mix of the uses proposed, a State land use district boundary amendment from agriculture to urban may be appropriate and necessary.

If you have any questions, please contact Howard Fujimoto of our CZM Program at 587-2898.

Sincerely,

Rick Egged
Director
Office of Planning

BENJAMIN J. CATE
SECRETARY
BRADLEY J. MOSSER
DIRECTOR

Tel: (808) 587-2828
Fax: (808) 587-2828



March 10, 1998

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

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. Gill:

Thank you for your comments in your letter of February 23, 1998 regarding the proposed regional park and sports complex. The Draft EIS will include photographs of the existing site. A traffic study, drainage report and nonpotable water resource study are being conducted for the project. The results will be included in the Draft EIS.

With regards to nocturnal fauna, a telephone conversation with a U.S. Fish and Wildlife biologist indicated that nocturnal fauna are not known to frequent the area, and are therefore, not a concern.

Although details such as the types of plantings to be used at the proposed site is unavailable at this point of the project's development, the use of native Hawaiian plants will be considered during the design phase of the proposed regional park and botanical garden.

Historic information available for the region will be included in the Draft EIS. In addition, we are currently consulting with the State Historic Preservation Division regarding the cultural history of the area. Any culturally-historic reference to the site will be included in the Final EIS.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen, AICP

217 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel: (808) 521-9110
Fax: (808) 521-9140

BENJAMIN J. CAYETANO
Secretary



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4188

February 23, 1998

TO: The Honorable Randall K. Fujiki, Director and Building Superintendent
Building Department
City and County of Honolulu

FROM: Director of Environmental Quality Control

SUBJECT: Final Environmental Assessment/Environmental Impact Statement Preparation Notice (FEA/EISPN) for Waiola Regional Park and Sports Complex, Central Oahu, Tax Map Key 9-4-05-74.

Having reviewed the subject FEA/EISPN, we submit the following comments for your response.

- 1) Please provide photographs of the existing site.
- 2) Please provide a regional traffic impact analysis.
- 3) Please discuss the impacts of lighting on nocturnal fauna such as the Newell's shearwater.
- 4) Please discuss the cumulative and indirect impacts of the facility on drainage and the water quality of Kipsapa Stream, Waikole Stream, and West Loch, Pearl Harbor.
- 5) Please discuss the use of native Hawaiian plants (especially xerophagic ones) in the landscaping of the overall park, including the five-acre botanical garden.
- 6) On page 8, the report notes that no archaeological sites were mentioned in McAllister's *Archaeology of Oahu*, and Sterling and Summers' *Sites of Oahu*. Please discuss in the draft environmental impact statement historic and/or ethnographic information for the region contained in those references and other documents. Please find enclosed, also the guidelines adopted by the Environmental Council in 1997 for assessing cultural impacts for your use in preparing the draft environmental impact statement.
- 7) Please discuss water use for the proposed park. What are the sources of water (e.g. Waiahole ditch, new well, reclaimed waste water, potable Board of Water Supply water)?

Please include a copy of this memorandum, any other comment letters and your responses in the draft environmental impact statement for this project. If there are any questions, please call Leslie Segundo of my staff at 586-4185. Thank you for the opportunity to comment.

GARY GILL

Enclosure

- cc Mr. Warren Sato, Building Department (w/enclosure)
- Mr. John Whalen, Plan Pacific, Inc. (w/enclosure)



March 10, 1998

Mr. Patrick Onishi, Director
Planning Department
City and County of Honolulu
650 South King Street, 8th Floor
Honolulu, Hawaii 96813

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. Onishi:

Thank you for your comments in your letter of February 23, 1998 regarding the proposed regional park and sports complex. The Draft EIS will include a discussion of the applicable City and County of Honolulu Development Plan and General Plan objectives and policies.

Regarding the proposed Junior Golf Course, we have since modified the site plan and are no longer including a golf course as part of the development.

Minutes of the Mayor's Public-Private Sports Industry Task Force was unintentionally excluded from the EIS Preparation Notice but will be included in the Draft EIS.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

TEL: (808) 521-9118
FAX: (808) 521-9118

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

450 SOUTH KING STREET 8TH FLOOR • HONOLULU HAWAII 96813 1017
PHONE (808) 521-4523 • FAX (808) 521-4858



ET 1/98-0153

February 23, 1998

Mr. John P. Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Environmental Impact Statement Preparation
Notice for Waiola Regional Park and Sports Complex

Thank you for giving us the opportunity to review the Environmental Impact Statement Preparation Notice (EISPN) for the proposed Waiola Regional Park and Sports Complex Project. We have reviewed the subject document and offer the following comments:

- The Draft Environmental Impact Statement (DEIS) should include discussion on all applicable City and County of Honolulu Development and General Plan Objectives and Policies.
- The Central Oahu Development Plan Public Facilities Map identifies the following projects in the area:
 - 1) site determined, within six years, publicly funded park symbol (Waiola Sports Complex);
 - 2) site determined, within six years, publicly funded well symbol (Waipahu Wells III); and
 - 3) within six years, publicly funded transportation, additional right-of-way and new streets symbol (Kamchameha Highway Bus Lanes - Mililani to Waiawa Interchange).

Mr. John P. Whalen, AICP
Plan Pacific
February 23, 1998
Page 2

- Table 1 of the EISPN identifies an optional Junior Golf Course within the area. A proposed Junior Golf Course would require an amendment to the Central Oahu Development Plan Public Facilities Map.
- The Consultation section of the EISPN states that minutes of the meetings of Mayor's Public-Private Sports Industry Task Force are included in the following section. The minutes was not included in EISPN and recommend that the DEIS include these minutes.

Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

Yours very truly,



PATRICK T. ONISHI
Chief Planning Officer

PTO:lh

c: Building Department
OEQC



March 10, 1998

Ms. Esther Ueda, Executive Officer
Land Use Commission
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Re: Waiala Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Ms. Ueda:

Thank you for your comments in your letter of February 2, 1998 regarding the proposed regional park and sports complex. The Draft EIS will reflect the corrections noted in your letter and will include a map showing the project site in relation to the State Land Use Districts.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.



John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel: (808) 521-9418
Fax: (808) 521-9448

Mr. John P. Whalen, AICP
Plan Pacific
February 23, 1998
Page 2

- Table 1 of the EISPN identifies an optional Junior Golf Course within the area. A proposed Junior Golf Course would require an amendment to the Central Oahu Development Plan Public Facilities Map.
- The Consultation section of the EISPN states that minutes of the meetings of Mayor's Public-Private Sports Industry Task Force are included in the following section. The minutes was not included in EISPN and recommend that the DEIS include these minutes.

Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

Yours very truly,


PATRICK T. ONISHI
Chief Planning Officer

PTO:lh

c: Building Department
OEQC



March 10, 1998

Ms. Esther Ueda, Executive Officer
Land Use Commission
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Ms. Ueda:

Thank you for your comments in your letter of February 2, 1998 regarding the proposed regional park and sports complex. The Draft EIS will reflect the corrections noted in your letter and will include a map showing the project site in relation to the State Land Use Districts.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.


John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

TEL: (808) 521-9410
FAX: (808) 521-9440

MERIAM J. CAYetano
Partner



ESTHER UEDA
Executive Officer

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827
February 2, 1998

John P. Whalen
PlanPacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Environmental Impact Statement Preparation Notice
(EISPN) for the Waiola Regional Park and Sports
Complex

We have reviewed the subject EISPN transmitted by your
letter dated January 28, 1998, and have the following comments:

- 1) We confirm that the project site, as represented on the location map (Figure 1), is located within the State Land Use Agricultural District. We note that the summary on page 1 incorrectly refers to said district as "Agriculture."
- 2) On page 9 of the EISPN, it is stated that the landowner of the project site petitioned the Commission for an Urban District boundary amendment, which failed to gain approval. We wish to clarify that the Commission approved the reclassification of the project site, then identified as TMK 9-4-07: 1, from the Agricultural District to the Urban District, for a residential subdivision, subject to five preconditions and 21 conditions, pursuant to Findings of Fact, Conclusions of Law, and Decision and Order dated September 18, 1989 (Docket No. A89-638/ Department of General Planning, City and County of Honolulu).

On August 27, 1990, the Petitioner filed a Motion for Order Extending the Time to Comply with a Precondition in Decision and Order and a subsequent Amended Motion, which the Commission denied by Order dated September 5, 1991. In the Order, the Commission found that the Petitioner failed to comply with the Commission's precondition and to obtain an extension of time to

John P. Whalen
February 2, 1998
Page 2


comply with the precondition. The Commission therefore ordered that the subject property was to remain in the Agricultural District.

- 3) We suggest that the draft environmental impact statement include a map showing the project site in relation to the State Land Use Districts.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject EISPN.

Should you have any questions, please feel free to call me or Bart Saruwatari of our office at 587-3822.

Sincerely,


ESTHER UEDA
Executive Officer

EU:th



March 10, 1998

Ms. Mary Steiner, CEO
The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

Re: **Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice**

Dear Ms. Steiner:

Thank you for your comments in your letter of February 18, 1998 regarding the proposed regional park and sports complex. We concur that relocating the 46Kv transmission lines underground will greatly enhance the project. The City and County does plan to underground the utility lines as part of the proposed development. A visual impact analysis was prepared and includes photos of the Kamehameha Highway frontage of the site before and after the development

A soil study will be conducted as part of the project's pre-construction activities to determine whether there are high levels of herbicides and pesticides in the ground. The City and County will comply with any mitigation measures recommended as a result of the study.

The proposed project will also employ an effective dust control plan, including frequent watering of bare-dirt surfaces, use of wind screens, and covering of open-bodied trucks, to minimize fugitive dust emissions. Grading, excavation and construction activities will conform with all relevant state and local controls to minimize air quality and noise impacts.

A visual impact analysis is being prepared and will include photos of the site, before and after the proposed development.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen, AICP

717 Bishop Street
Suite 1570
Honolulu, HI
Honolulu 96813

Tel: (808) 521-9118
Fax: (808) 521-9118



THE OUTDOOR CIRCLE
1314 South King Street, Suite 306, Honolulu, HI 96814
Phone: (808) 521-9118 Fax: (808) 521-9118

February 18, 1998

City and County of Honolulu
Building Department
630 King Street
Honolulu, HI 96813
Attn: Warren Sato

RE: **Environmental Impact Statement Preparation Notice
Waiola Regional Park and Sports Complex**

Dear Mr. Sato:

Thank you for sending a copy of the above referenced EISPN, and for allowing us the opportunity to comment. For more than 85 years, The Outdoor Circle has been a proponent of maintaining open space for park and recreational use. We are pleased with the City's plans to preserve 269 acres in Central Oahu to be used as a regional park and sports complex.

Upon review of the EISPN, The Outdoor Circle's comments and concerns are listed as follows:

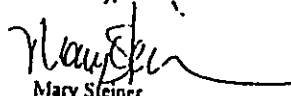
- Existing on the land are 46Kv transmission lines maintained by Hawaiian Electric Company. According to HECO, building the park will require substantial additions to the distribution system. When relocating their existing lines, and adding new, the utility company should be required to underground all the lines in the park. This will result in a greatly enhanced experience for the park user.
- Since the land was once pineapple fields we feel it is important that soil testing be done. Large quantities of herbicides and pesticides may be in the ground. No mention of this was in the EISPN.
- A great deal of grading, excavation and construction will be done in the park. As a protection for those who live near the site, it is important that the DEIS detail mitigation measures that will be implemented to manage this.

Honolulu, HI
A Non-Profit Organization
BRANCHES
OAHU
Kauai
Maui
Molokai
HAWAII
Kona
Maui
Honolulu
Kauai
Maui
Molokai
KAMUKAMUKA
GARDEN CIRCLE
Honolulu

4. Detailed visuals must be provided showing the impact to the view planes caused by the facilities in the park.

Again, thank you for the opportunity to comment. I look forward to receiving the Draft Environmental Impact Statement and reviewing the proposed Waiola Regional Park and Sports Complex in detail.

Sincerely,


Mary Steiner
CEO

cc: Mayor Jeremy Harris
Plan Pacific, Inc.
Gary Gill



March 10, 1998

Mr. Richard G. Poirier, Chair
Aieali/Waipio/Melemanu Neighborhood Board No. 25
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Re: Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice

Dear Mr. Poirier:

Thank you for your comments in your letter of February 18, 1998 regarding traffic impact concerns with the proposed regional park and sports complex. A traffic study was conducted for the project and the results will be included in the Draft EIS. The study found that the park will not have a significant adverse impact on the regional roadway system.

With regard to a future through-road connection of Ka Uka Boulevard and Palwa Street, although the proposed project includes reserving an easement for a future connector road, this road is not being proposed as part of the development, and it is not necessary for the adequate functioning of the park. The City and County will, however, be constructing the road at a later date, as a separate project under a separate environmental assessment.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.


John P. Whalen, AICP



MILILANI/WAIPIO/MELEMANU NEIGHBORHOOD BOARD NO. 25

NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 408 • HONOLULU, HAWAII 96813

February 18, 1998

Mr. John P. Whalen
PLANPACIFIC
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear John:

Thank you for sending the Environmental Assessment and Preparation Notice (EISPN) for the proposed Waiola Regional Park and Sports Complex. The residents and constituents of our Mililani/Waipio/Melemano Neighborhood Board area continue to look forward with anticipation to the recreational opportunities that the Waiola Regional Park and Sports Complex will provide.

One area in which the EISPN appears to be deficient is in transportation, which is a critical consideration for the Mililani community. We are in total agreement with the position taken by the Department of Transportation Services in its letter 1/96-00097R of March 13, 1996 that a "northerly extension of Paiwa Street to link with Ka Uka Boulevard and ultimately the H-2 Freeway" should be incorporated into the Park Roadway Master Plan. Given the fact that this link has always been part of the regional highway network and clearly shown on previous housing and recreation/open space plans for the Waiola parcel, we fail to understand why this much-needed future through-road is not being proposed as part of the Waiola Regional Park and Sports Complex project.

This is such an important aspect of the circulation system for the region and the Waiola complex site that it should be dealt with fully in the EIS process, whether or not the connection of Paiwa Street and Ka Uka Boulevard is part of the Waiola project. In this regard, we would like to see the following transportation issues addressed as part of the EIS:

1) Will the proposed number of parking spaces provided at buildout adequately accommodate the 10,000 plus people converging on a peak weekend day at buildout?

2) How will the inclusion or non-inclusion of a through-road as part of this initial phase affect internal circulation within the park now and at buildout?

3) Would inclusion of the through-road as part of this initial phase result in more parking and/or the better placement of parking spaces closer to the proposed activity areas?



Oahu's Neighborhood Board System - Established 1973

Mililani/Waipio/Melemano Neighborhood Board #25
Letter to John Whalen of February 18, 1998
Page 2

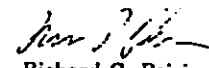
4) Would inclusion of the through-road as part of this initial phase result in the more or less likely possibility of having construction of the road federally-funded?

5) How will the presence or absence of a through-road as part of this initial phase impact surrounding land uses and regional transportation patterns now and at buildout?

6) In terms of specific projected land uses, how will the presence or absence of a through-road mitigate or contribute to the regional transportation impact of the recently approved Gentry-Waiawa commercial development proposal?

Your kind attention to these important matters of mutual concern will be greatly appreciated. We look forward to receiving the Draft Environmental Impact Statement for review when it is ready.

Sincerely,


Richard G. Poirier
Chair

- c. Mayor Jeremy Harris
Rene Mansho, Councilmember
Cliff Laboy, Mililani Recreation Advisory Council
Roy Doi, Neighborhood Board #35
Ben Lee, Chief of Staff
Malcom Tom, Department of the Budget
Pat Onishi, Department of Planning
William Balfour, Department of Parks and Recreation
Cheryl Soon, Department of Transportation Services
Warren Sato, Building Department
Gary Gill, State Office of Environmental
Quality Control



March 10, 1998

Mr. Kenneth E. Sprague, Director
Department of Wastewater Management
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Re: **Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice**

Dear Mr. Sprague:

Thank you for your comments in your letter of February 23, 1998 indicating that the municipal wastewater system is available and adequate to accommodate the proposed regional park and sports complex. We are currently reviewing available connection points for the proposed project and will include a discussion of our findings in the Draft EIS. We understand that a "Sewer Connection Application" form must be submitted for your department's review and approval, and that there will be a Wastewater System Facility charge.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

PH (808) 521-9418
FAX (808) 521-9468

DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE (808) 521-9462 • FAX (808) 521-9478

JEREMY HARRIS
MAYOR



KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR

CHESTER A. JOHNSON, P.E.
DEPUTY DIRECTOR

In reply refer to:
WCC 98-33

February 23, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: **ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
FOR THE WAIOLA REGIONAL PARK AND SPORTS COMPLEX**
TRIK: 9-4-05: 74

The municipal wastewater system is available and adequate to accommodate the proposed project. The closest adequate connection point is manhole HN-05-GW-1104 (see attached map). If connection is within Kamehameha Highway, then a section of an existing 18-inch sewer line needs to be relieved (see attached map). Other connection points, such as Paiwa Street, may be considered. Capacity of the system is dependent upon flow distribution and relief of existing sewer lines may be required. The Waiola Regional Park and Sports Complex, totaling approximately 270 acres, will include baseball, tennis, basketball/volleyball, and football/soccer facilities. Additional areas will be set aside for a boxcar racing track, skateboard bowls, and in-line hockey courts.

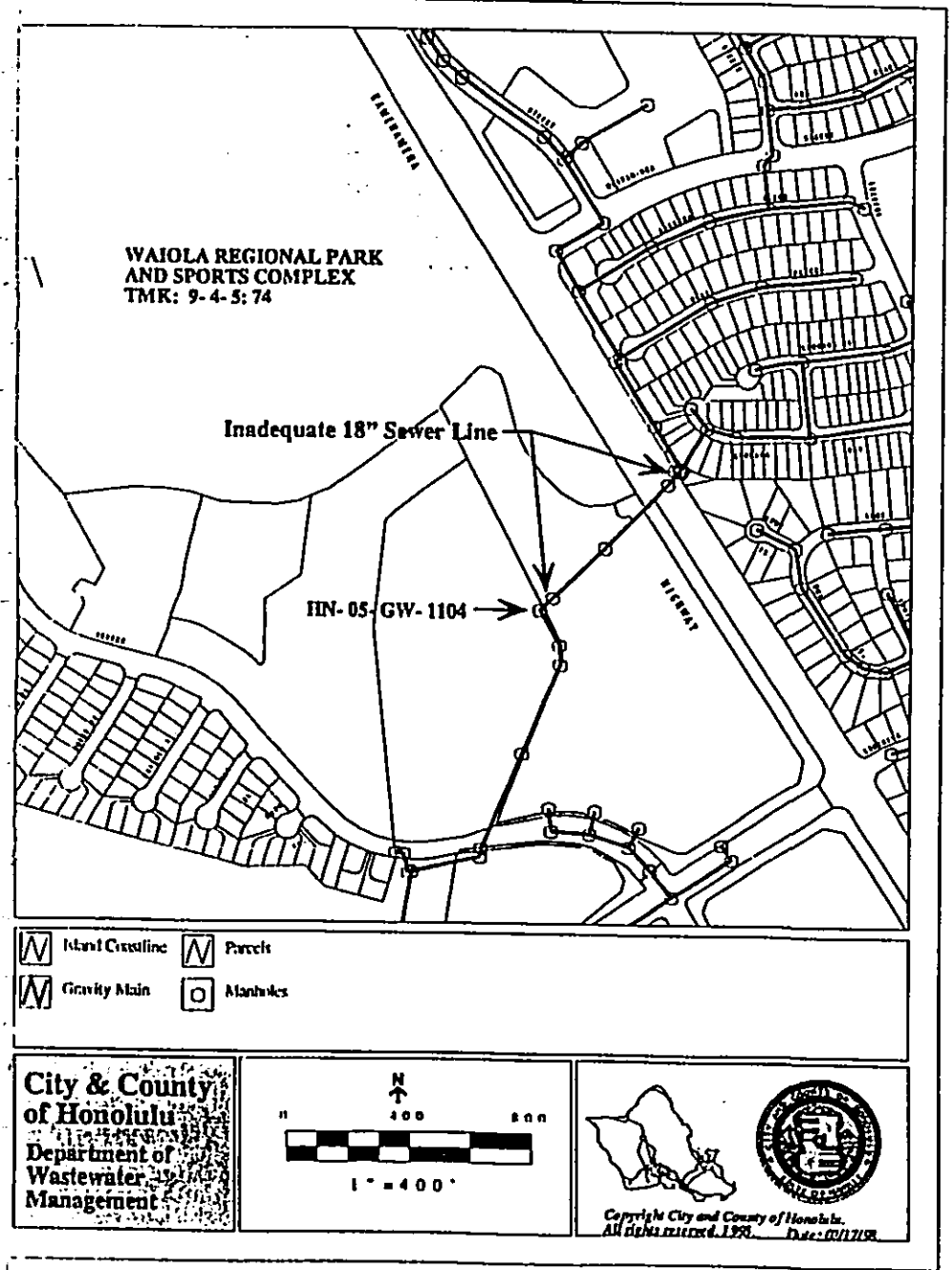
This statement shall not be construed as confirmation of sewage capacity reservation. Sewage capacity reservation is contingent on submittal and approval of a "Sewer Connection Application" form. This project is liable for payment of a Wastewater System Facility Charge.

If you have any questions, please contact Ms. Tessa Ching of the Service Control Branch at 523-4956.

Sincerely,

KENNETH E. SPRAGUE
Director

Attachment



March 10, 1998

Ms. Darryln T. Bunda, Executive Director
 Leeward Oahu Transportation Management Association
 94-229 Waipahu Depot Road, #407
 Waipahu, HI 96797

Re: Waiola Regional Park and Sports Complex
 Environmental Impact Statement (EIS) Preparation Notice

Dear Ms. Bunda:

Thank you for your comments in your letter of February 24, 1998 regarding traffic impact concerns with the proposed regional park and sports complex. A traffic study was conducted for the project and the results will be included in the Draft EIS. The study found that the park will not have a significant adverse impact on the regional roadway system.

With regard to a future through-road connection of Ka Uka Boulevard and Paiwa Street, although the proposed project includes reserving an easement for a future connector road, this road is not being proposed as part of the development, and it is not necessary for the adequate functioning of the park. The City and County will, however, be constructing the road at a later date, as a separate project under a separate environmental assessment.

Your letter and this response will be included in the Draft EIS.

Sincerely,
 PlanPacific, Inc.

J.P.
 John P. Whalen, AICP

737 Bishop Street
 Suite 1520
 Honolulu
 Hawaii 96813
 Tel: (808) 521-9418
 Fax: (808) 521-9468



Leeward Oahu Transportation Management Association

February 24, 1998

Mr. John P. Whalen, AICP
PlanPacific
737 Bishop Street, Suite 1520
Honolulu, HI 96813

RE: Waiola Regional Park and Sports Complex

Dear John:

Thank you for sending us the Environmental Impact Statement Preparation Notice (EISP/N) for the proposed project.

After reviewing the information in this document, we find it difficult to understand why the construction of the through-road linking Ka Uka Boulevard and Paiva Street is not being proposed as part of this project. It would seem that the inclusion of the through-road would have enabled a thorough and comprehensive assessment of regional access and circulation issues to be addressed in the DEIS.

We believe that the DEIS should provide the community with answers to the following questions:

1. How does a project of this magnitude expect that a one-way in/one-way out traffic pattern onto Kanehamaha Highway will not adversely impact this corridor?
2. Does the reservation of an easement for the future through-road as a traffic mitigation measure indicate that there is an impending problem? If so, why is it necessary to put off necessary infrastructure improvements until there is a problem?
3. What is the basis for inferring that the construction of the second access through Paiva Street has yet to be determined a "feasible and desirable component(s) of the regional transportation system?" Correspondence from the Dept. of Transportation Services (March 13, 1996 and February 27, 1997) already indicates support for the extension of Paiva Street.
4. What are the beneficial impacts of a shorter, more direct north-south route into the park site on:
 - a) the Waipahu community (e.g., Waipahu Complex Schools, Village Park, Royal Kunia and Waikale)?
 - b) the regional highway network?
 - c) the Oahu bikeway network?
 - d) the improvement of bus service in the region?

94-229 Waipahu Depot Road, #407 • Waipahu, Hawaii 96797
Telephone Number (808) 677-RIDE • Facsimile Number (808) 676-4741

Mr. John P. Whalen
February 24, 1998

We appreciate the opportunity to comment on this important project and look forward to receiving a copy of the DEIS.

Very truly yours,

Darryn T. Bunda
Darryn T. Bunda
Executive Director



March 17, 1998

Dr. Herman M. Aizawa, Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, HI 96804

Re: **Waiola Regional Park and Sports Complex
Environmental Impact Statement (EIS) Preparation Notice**

Dear Dr. Aizawa:

Thank you for your comments in your letter of February 11, 1998 regarding the proposed regional park and sports complex. We agree that the proposed project will expand the recreational opportunities for students in the Waipahu and Mililani high school complexes, and appreciate your support.

Your letter and this response will be included in the Draft EIS.

Sincerely,
PlanPacific, Inc.

John P. Whalen
John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
96813
Tel: 808/521-9999
Fax: 808/521-9999

BENJAMIN J. CATETANG
OFFICE OF THE SUPERINTENDENT



STATE OF HAWAII
DEPARTMENT OF EDUCATION
425 JONES BLVD
HONOLULU HI 96813

HERMAN M. AIZAWA PhD
SUPERINTENDENT

February 11, 1998

Mr. John P. Whalen, AICP
PlanPacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: EISPN for the Waiola Regional Park
and Sports Complex

The Department of Education supports the development of the Waiola Regional Park and Sports Complex. The proposed facilities will expand the recreational opportunities for students in the Waipahu and Mililani high school complexes.

If you have any questions, please call Mr. Sanford Beppu at 733-4862.

Sincerely,

Herman M. Aizawa
Herman M. Aizawa, PhD
Superintendent

HMA:hy

cc: A. Suga, OBS
W. Staszko, LDO
A. Hokama, CDO

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

KANANIHANA STREET 5TH FLOOR • HONOLULU HAWAII 96813
PHONE: (808) 525-4434 • FAX: (808) 525-2741



JANNAE SULLIVAN
DIRECTOR
STRENGTH & CHEER
98-00687 (ST)
'98 EA Comments Zone 9

February 19, 1998

Mr. John P. Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

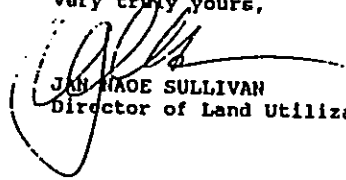
Dear Mr. Whalen:

Environmental Impact Statement Preparation Notice (EISPN):
Waiola Regional Park and Sports Complex
Waiola, Ewa, Oahu
Tax Map Key: 9-4-05: 74

We have reviewed the EISPN for the above-referenced project transmitted by your letter dated January 28, 1998, and have no comments to offer at this time. However, we do look forward to reviewing the Draft Environmental Impact Statement when it is completed.

Thank you for the opportunity to comment on this document. Should you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,


JANNAE SULLIVAN
Director of Land Utilization

JHS:am

cc: Building Department

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APPENDIX I
COMMENTS AND RESPONSES TO THE DRAFT EIS

Comments Received on the Draft Environmental Impact Statement

AGENCY/ORGANIZATION	DATE OF LETTER	AGENCY/ORGANIZATION	DATE OF LETTER
<u>City and County of Honolulu</u>		Office of Environmental Quality Control	May 7, 1998
Board of Water Supply	May 7, 1998	Office of Hawaiian Affairs	April 1, 1998
City Council, Parks and Human Services Committee	---	Office of Planning	---
Department of Land Utilization	May 7, 1998	University of Hawaii at Manoa Environmental Center	May 7, 1998
Department of Parks and Recreation	April 14, 1998	University of Hawaii at Manoa Water Resources Research Center	---
Department of Public Works	April 7, 1998	<u>United States</u>	
<i>Department of Transportation Services</i>	<i>May 15, 1998</i>	<i>Department of Agriculture</i>	<i>May 8, 1998</i>
Department of Wastewater Management	May 1, 1998	Department of the Army	April 17, 1998
Mililani/Waipio/Melemanu Neighborhood Board No. 25	May 5, 1998	Fish and Wildlife Service	---
Waipahu Neighborhood Board No. 22	---	Natural Resources Conservation Service	---
Mililani Mauka Neighborhood Board	---	<u>Other Organizations</u>	
Planning Department	May 1, 1998	American Lung Association	---
Police Department	April 14, 1998	Hawaii Audubon Society	---
<u>State of Hawaii</u>		Hawaiian Electric Company	March 24, 1998
Dept. of Business, Econ. Development & Tourism	---	Leeward Oahu Transportation Management Assoc.	May 6, 1998
Department of Education	April 3, 1998	Life of the Land	---
<i>Department of Health</i>	<i>May 6, 1998</i>	Mililani Recreation Advisory Council	---
<i>Department of Land & Natural Resources</i>	<i>May 11, 1998</i>	The Outdoor Circle	May 1, 1998
Department of Transportation	May 7, 1998	Sierra Club	---
Land Use Commission	March 27, 1998	SMS Research	---

¹ Italics represent comments received or postmarked after the May 7, 1998 comment deadline.

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
10 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813
PHONE (808) 527-4180
FAX (808) 533-2714



May 7, 1998

JEREMY HARRIS, Mayor

WALTER O. WATSON, JR., Chairman
EDDIE FLORES, JR.
KAZU HAYASHIDA
JAN M. L. Y. AMII
FORREST C. MURPHY
JONATHAN K. SHIMADA, PhD
BARBARA KIM STANTON

BROOKS H. M. YUEN, Acting
Manager and Chief Engineer



Mr. John P. Whalen
Page 2
May 7, 1998

Mr. John P. Whalen
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Your Transmittal of the Draft Environmental Impact Statement for the Proposed Waiola Regional Park and Sports Complex, Waipahu, Oahu, TMK: 9-4-05-74

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (EIS) for the proposed park and sports complex.

Our previous comments of March 9, 1998 on the EIS preparation notice are still applicable and attached for your information. In addition, we provide the following comments:

1. The water master plan is currently under review by the Board of Water Supply (BWS). The adequacy of the existing source, transmission and storage capacities to accommodate the proposed domestic demands will be determined when our review is completed.
2. The treatment facilities to remove pesticides from the Waipio Heights Wells II are presently under design and construction is scheduled for fiscal year 2000. Therefore, the temporary use of this source for irrigation water for the sports complex will conflict with our plans to bring this potable water source back into operation. In addition, the EIS should address any health concerns associated from the presence of pesticides in the irrigation water, especially if sprinklers are the preferred application method. Sprinkling will volatilize the pesticides from the irrigation water and create potential airborne contaminants.
3. The Waiola sports complex is located within the No-Pass Zone where the application of low quality nonpotable water may degrade the underlying potable aquifer. The BWS maintains two large pumping stations and is constructing two new stations in close proximity and downgradient of the parcel. These well stations will have approximately 16 million gallons per day (mgd) of average day source capacity and over 30 mgd of peak pumping capacity. Therefore, the nonpotable water irrigation source should be of high quality and low mineral content.
4. The EIS should include a map showing the wellhead protection area for the existing and proposed Waipahu wells. Groundwater flow directions and all wells in the vicinity and downgradient of the application should also be shown.

5. The EIS evaluates three different nonpotable water sources but discounts them based on availability, quality and health concerns. Without a commitment for the development of a nonpotable source, we cannot approve the temporary use of Waipio Heights Wells II. We recommend the developer investigate the use of the Oahu Sugar Co. water sources in the Waikole Gulch as a nonpotable source. These sources, at lower pumping levels, may not affect our Waipahu wells located downgradient from the sports complex. In addition, they may produce acceptable chloride content such that its application will not detrimentally affect the underlying aquifer.

6. The BWS has applied for a water reservation from the Waipahu-Waiawa water management area for various municipal developments which have development plan approval. However, the current water reservation request does not include the Waiola site because the development plan did not reflect a municipal land use. The water reservation request will be updated when the Central Oahu development plan revision, which includes the Waiola sports complex, is approved.

Like the Royal Kunia and Waikole golf courses, the Commission on Water Resource Management may consider the approval of a groundwater source for the 0.73 mgd irrigation demand of the sports complex. Consideration may also be given for immediate and short term water needs projected over a four-year period.

7. The EIS correctly states that BWS has drinking water concerns about the application of partially treated reclaimed water over the potable aquifers because there is a lack of information and study on any long term detrimental effects. Because Hawaiian volcanic formations are very permeable, we only support the use of reclaimed water, where there is no potential impact to potable aquifers such as the coastal caprock areas, which are makai of our drinking water wells.

Our experience with elevated nitrate levels in our Kunia Wells I and II, clearly show a relationship between surface activities and groundwater quality. The historical application of brackish water and pesticides in Central Oahu, have percolated into our drinking water aquifers. These facts support our concerns about the public drinking water quality.

We note that the Department of Health guidelines on reclaimed water define R-1 water as achieving a "significant reduction in viral and bacterial pathogens". R-1 is oxidized, filtered and disinfected to a reduction of 1/10,000 of the initial concentration of viral pathogens and the fecal coliform count shall not exceed 1 per 100 milliliters. Although the guidelines significantly reduce the pathogens in R-1 reclaimed water, it does not require the demineralization for reduction of chlorides and nitrates, which, like some viruses, have a negative molecular charge and may become mobile as water percolates through the soil column. We also note that in practice, it is difficult to match the amount of applied irrigation water to the evapo-transpiration rate to prevent percolation of salts and pathogens when unexpected rains or over-irrigation occurs.



Mr. John P. Whalen
Page 3
May 7, 1998

Therefore, until more study is completed, R-1 reclaimed water should be thoroughly disinfected and demineralized for application over the potable aquifers, especially if there are drinking water wells immediately downgradient of the application.

8. The relocated access roadway to our Waikole 395' Reservoirs should be shown on the conceptual master plan. The future realignment of the existing 20-inch transmission main connecting the reservoirs to the Waikole development, should be kept accessible for maintenance purposes. The construction plans for the future realignment and off-site water system improvements should be submitted for our review and approval.
9. Approved reduced pressure principle backflow prevention assemblies are required to be installed immediately after all domestic water meters serving the proposed project. The cross-connection control requirements will be determined when the building permit applications are submitted for our review and approval.

If there are any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

BROOKS H. M. YUEN
Acting Manager and Chief Engineer

Attachment

cc: Building Department
Office of Environmental Quality Control



July 14, 1998

Mr. Brooks H.M. Yuen, Acting Manager and Chief Engineer
City and County of Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Yuen:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. It is acknowledged that Board of Water Supply (BWS) approval of the water master plan will be required before construction can begin on the water system facilities for Phase 1 of the park development.
2. I understand that, at a June 29 meeting, the Department of Design and Construction worked out an agreement with your agency for the interim use of Waipio Heights Wells II for irrigating the Phase 1 portion of the park and a timetable for securing a long-term irrigation water source. In consulting with the Department of Health, we were not able to find any guidelines or standards concerning volatized pesticides from irrigation spray. However, this is not expected to present a health hazard because the park will be irrigated at night when it is not in active use.
3. Your caution regarding the quality of irrigation source water in the No-Pass Zone is acknowledged. The design team for this project is aware that the quality of this source must meet BWS approval and will be conferring with your staff to determine what level of mineral content and other standards are deemed acceptable (see item 7, below.)
4. The delineation of the wellhead protection area, as identified by the Department of Health, and the downgradient flow direction will be indicated on a map in the Final Environmental Impact Statement (FEIS).
5. The Water Resource Evaluation report in the DEIS did not intend to dismiss the three alternative sources of nonpotable water for irrigation, but only to disclose the factors that regulatory agencies, including the BWS and the Commission on Water Resource Management were likely to consider in determining which source would be acceptable, and under what conditions. The project's water resources consultant did consider the use of the Oahu Sugar Company source in Waikole Gulch, as you suggested, but

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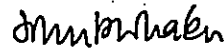
Letter to Mr. Brooks H.M. Yuen
July 14, 1998
Page 2

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 27th FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523 4614 • FAX: (808) 527 8743

recommended against this alternative for several reasons: (1) the source is too far away (approximately 6,000 feet); (2) the existing pipeline for this system is inoperable and would be costly to repair or replace; and (3) there is no indication or reason to believe that the Water Resources Development Commission would favor this source over Waiahole Ditch or other alternatives.

6. The Central Oahu Development Plan Public Facilities Map has been amended to designate the subject site for park use. Since this is now City policy, I understand from Mr. Barry Usagawa of your agency that BWS will update its water reservation request to the Commission on Water Resource Management to reflect the projected municipal water demand of the proposed park use.
7. The Department of Design and Construction and the project's design team are aware of BWS' concerns about the use of treated wastewater effluent for irrigation at this site. As you know, the Department of Environmental Services has decided to upgrade the Mililani Wastewater Treatment Plant to produce R-1 treated effluent for irrigation. This will be used as a long-term irrigation source for the Central Oahu Regional Park only if it meets BWS' approval.
8. The access road to the Waialeale 395' Reservoirs will be relocated and the 20-inch transmission lines will be realigned and kept accessible for maintenance purposes. The conceptual plan map will be revised to show the relocated access road; however, due to the scale of the map in the FEIS, it may not be very distinct. BWS will be given the opportunity to review and approve more detailed plans for the relocation of the access road and the realignment of the transmission line before construction begins.
9. Your comments concerning backflow prevention assemblies and cross-connection controls are noted and have been forwarded to the civil engineer who is designing the water system facilities for the park.

Sincerely,


John P. Whalen, AICP

JEREMY HARRIS
MAYOR



May 7, 1998

JAN NADE SULLIVAN
DIRECTOR

LORETTA C. CHIE
DEPUTY DIRECTOR

98-02047 (ST)
'98 EA Comments Zone 9

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Draft Environmental Impact Statement (EIS)
Waiola Regional Park and Sports Complex
Waiola, Ewa, Oahu
Tax Map Key: 9-4-05: 74

We have reviewed the Draft EIS for the above-referenced project transmitted by your letter dated March 18, 1998, and offer the following comments:

1.5 DEVELOPMENT SCHEDULE

This section does not disclose which facilities and improvements are planned to comprise each of the proposed phases of this complex. It would be helpful if the Final EIS includes a chart which indicates the component facilities of each successive phase. In addition, the Development Phasing Plan (Exhibit 5) should be revised to more clearly delineate the location of each phase, perhaps the use of varying shades would be more effective.

1.6 ESTIMATED COSTS

Similarly, the Final EIS should include cost estimates which are tied to the various phases of the development schedule.

Mr. John P. Whalen, AICP
Page 2
May 7, 1998

1.7 CHANGES IN LAND USE DESIGNATION REQUIRED TO IMPLEMENT THE PROJECT

We concur with the State Land Use Commission (SLUC) that the reclassification of the project site to the Urban District may be more appropriate than it remaining within the Agricultural District.

1.9.4 Water

The phases outlined in various exhibits relating to water and wastewater demands (Exhibit Nos. 6, 9, 11) do not coincide with those shown in the Phasing Plan (Exhibit 5). The Final EIS should coordinate or clarify these apparent discrepancies.

2.8 SCENIC VIEWS

Insofar as this area of Oahu enjoys a "mostly unobstructed panoramic view of the (Waianae) mountain range," as well as a good view of Pearl Harbor, the Final EIS should include a more thorough visual analysis of the development of this facility. In addition to those exhibits which reveal the current view planes at this site (Nos. 16 and 17), the Final EIS should include exhibits which superimpose the completed complex in order to illustrate the visual impact of this project.

5.2.1 State Land Use

Should a land use district boundary amendment not be pursued for the development of this facility and the project site remain within the State Agricultural District, the Final EIS should be expanded to discuss the issues relevant to obtaining a State Special Use Permit (SUP). This discussion should address the appropriateness of this type of approval, as well as discuss the guidelines and criteria for granting a SUP pursuant to the State Land Use Law, Chapter 205, Hawaii Revised Statutes.

5.3.3 City & County Zoning

We confirm that pursuant to Article 9 of the Land Use Ordinance, Chapter 21, Revised Ordinances of Honolulu, the proposed complex is permitted within the AG-1 or any other zoning district provided that it is owned or managed by the County, State or Federal government to fulfill a governmental function, activity or service for public benefit and in accordance with public policy.

Mr. John P. Whalen, AICP
Page 3
May 7, 1998

Thank you for the opportunity to comment on this document. Should you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,


JANICE SULLIVAN
Director of Land Utilization

JNS:am

cc: Warren Sato, Building Department
Gary Gill, Office of Environmental
Quality Control

s:\ppd\del\swel2.sht



July 14, 1998

Jan Naoe Sullivan, Director
Department of Land Utilization
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Ms. Sullivan:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)**

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. Development Schedule

The scope of each development phase had not been well-defined when the DEIS was being prepared because the park master plan had not been completed and the budget process for Phase 1 development had just begun. Since that time, Mayor Harris has announced that Phase 1 will include grading, landscaping and site improvements for three baseball fields, but not construction of the baseball stadium, which will be deferred until a private sector entity has been selected to develop, operate and/or maintain the baseball complex. A similar approach will be used for the development of the proposed training center, tennis stadium, aquatic center and other major facilities designed for professional sports training programs and competitions. The FEIS will update the proposed sequencing of development to reflect the adopted master plan for the park; however, the actual schedule for implementation will depend on the availability of public funds and the degree to which the City can attract private sector funding to contribute to development and operations costs.

2. Estimated Costs

The estimated costs for each phase will be updated in the FEIS to reflect the adopted master plan.

3. Changes in Land Use Designation

The Planning Department, on behalf of the Department of Design and Construction, will petition the State Land Use Commission for a boundary amendment to include the entire park site in the State Urban District when the City obtains possession of the land. Since Phase 1 improvements involve only grading, landscaping, parking spaces, access roads and minimal structures, the

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Hawaii 96813

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Letter to Jan Naoe Sullivan
July 14, 1998
Page 2

Planning Department will request the State Land Use Commission to allow construction of this phase to proceed as a permissible use within the State Agricultural District.

4. Water

Exhibit 5 accurately depicts the phasing plan set forth in the adopted master plan for the park. In the FEIS, references to the phasing of water and wastewater improvements in Exhibits 6, 7, 9 and 11 will be revised and made consistent with Exhibit 5.

5. Scenic Views

The site conditions map in Exhibit 2 will be revised to indicate panoramic views of the Waianae Range, the Koolau Range and Pearl Harbor from within the site and view across the site from Kamehameha Highway. The latter view is depicted in the photographs in Exhibits 16a. and 17a. of the DEIS. Below each of these is a photographic simulation of the same view after park development, assuming utility lines remain overhead in Exhibit 16b, and are placed underground in Exhibit 17b. In either case, the post-development condition not only retains the panoramic vista of the mountains beyond, but significantly enhances the appearance of the foreground with landscaped berms and trees. The improvement is particularly noticeable when the utility lines are placed underground, as the City has now decided to do.

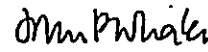
6. State Land Use

The City intends to petition the State Land Use Commission for a State Urban District boundary amendment.

7. City and County Zoning

The intent is to retain City ownership of all facilities and make them available for general public use most of the time. The extent of private sector participation in the cost of developing and/or maintaining some of the sports facilities and the degree to which these facilities will be used for professional and sponsor-supported sports competitions and training programs will not be known until the City has solicited requests for proposals from private sector entities. Zoning issues will be one of the factors for the City to consider if and when it decides to enter into a participation agreement of that sort.

Sincerely,


John P. Whalen, AICP

Letter to Jan Nooe Sullivan
July 14, 1998
Page 2

4. Some of the increase in unemployment is due to the loss of jobs in plantation agriculture, especially sugar cane and pineapple production, which is offset only partially by a rise in diversified agriculture. As stated in the DEIS, only 18,200 acres of the 131,430 acres (or approximately 14 percent of the land area) on Oahu in State Agricultural District are presently in crop production. The extent of agricultural lands in actual agricultural use has declined precipitously over the past decade.

Sincerely,

John P. Whalen
John P. Whalen, AICP

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 10TH FLOOR • HONOLULU HAWAII 96813
PHONE: (808) 523-4182 • FAX: (808) 523-4034



WILLIAM B. BELFORD JR.
DIRECTOR
MICHAEL T. AUM
DEPUTY DIRECTOR

April 14, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement (DEIS) for the
Proposed Waiola Regional Park and Sports Complex
Tax Map Key 9-4-05:074

This is in response to the subject DEIS for the proposed
Waiola Regional Park and Sports Complex project.

Based on our review of the DEIS, we are offering the
following comments.

The proposed project will provide welcomed additions to
the recreational facilities of the region. In addition, it
will feature other sports facilities not currently available,
including in-line skating-hockey rinks, skateboard park,
boxcar raceway, baseball stadium, field house, and an aquatic
center.

We request that efforts to obtain private resources be
continued to assist in the operation and maintenance of the
various facilities within the complex.

Mr. John P. Whalen
Page 2
April 14, 1998

Please call our planners, Mr. Donald Griffin or
Mr. Brian Suzuki, at 527-6324 or 527-6316 respectively, if
you have any questions.

Sincerely,

W.D. Balfour, Jr.
WILLIAM D. BALFOUR, JR.
Director

WDB:el

cc: Mr. Gary Gill, Office of Environmental Quality Control
Mr. Warren Sato, Building Department



July 14, 1998

William D. Balfour, Jr., Director
Department of Parks and Recreation
650 South King Street, 10th Floor
Honolulu, Hawaii 96813

Dear Mr. Balfour:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the
project name was changed by the City Council in its recent approval of the
construction budget for Phase I to emphasize the primary purpose of the park.

A solicitation package is currently being prepared by the City to request
proposals from the private sector to participate in the cost of developing and
maintaining the major sports facilities included in the conceptual master plan for
this project.

Sincerely,

John P. Whalen
John P. Whalen, AICP

737 Dunlap Street
Suite 1520
Honolulu
Hawaii 96813
Tel: (808) 521-9118
Fax: (808) 521-9128

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
410 SOUTH KING STREET 11TH FLOOR • HONOLULU HAWAII 96813
PHONE (808) 521-4150 • FAX (808) 521-1857

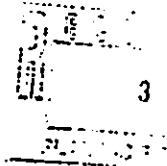


April 7, 1998

JONATHAN SHIMADA PhD
DIRECTOR AND CHIEF ENGINEER
ROLAND LIBBY JR.
DEPUTY DIRECTOR
ENV 98-077



Mr. John P. Whalen, AICP
Plan Pacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, HI 96813



Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement (DEIS)
Waiola Regional Park and Sports Complex
TMK: 9-4-05: 074

We have reviewed the subject DEIS and have no comments to offer at this time.

Should you have any questions, please contact Alex Ho, Environmental Engineer, at 521-4150.

Very truly yours,

JONATHAN K. SHIMADA, PhD
Director and Chief Engineer

July 14, 1998

Jonathan K. Shimada, Director
Department of Facility Maintenance
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Dear Dr. Shimada:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Sincerely,

John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813
Tel (808) 521-9418
Fax (808) 521-9448

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLAN BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4828 • FAX: (808) 523-4750

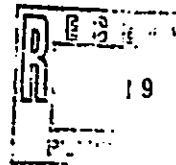


May 15, 1998

CHERYL D. SOON
DIRECTOR
JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

TSP3/98-01812R

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813



Dear Mr. Whalen:

Subject: Waiala Regional Park and Sports Complex

In response to your March 18, 1998 letter, the draft environmental impact statement for the subject project was reviewed. The resultant comments are as follows:

1. The alignment and cross-section of the internal roadway system should be provided to this department during the early phases of the project. The alignments should be designed to conform to current roadway standards, based on the classification of the facility, and established prior to submittal of subdivision plans.
2. The intended jurisdiction and functional maintenance of the roadways should be clearly identified. Since the primary use of the area will be for park operation, the roadways should remain under the jurisdiction of the Department of Parks and Recreation until such time that the roadways within the park area are fully improved and function as public thoroughfares.
3. The parking areas should be uniformly distributed throughout the site depending on the use of the individual sports facility. This will provide more areas where motorists can conveniently park and discharge passengers; thereby, discouraging these activities from occurring on adjacent streets. This will also facilitate the dispersion of vehicles after a major event.

Mr. John P. Whalen
May 15, 1998
Page 2

4. The findings and conclusions contained in the traffic impact assessment report adequately address the concerns of this department. It is our understanding that a subsequent report will be prepared to assess the traffic impacts of the through-road connection between Ka Uka Boulevard and Palwa Street.
5. The State of Hawaii bikeway master plan identifies a planned bikeway along the Kamehameha Highway boundary of the project. The connection of this bikeway with that planned as part of the future through-road should be discussed. Consideration should be given to the provision of the bikeways planned along the future through-road at the earliest opportunity, even if it is independent of the construction of the through-road.
6. In Section 1.11, on Page 18, the statement is made that a park-and-ride lot is planned at Royal Kunia. This park-and-ride lot is completed and operational.
7. In Section 2.2.2, on Page 23, transit bus amenities, such as convenient bus stops and a potential park-and-ride opportunity, are identified as potential traffic mitigation measures. The impact of the project on transit should also be discussed.
8. In Section 2.2.2, on Page 23, the future through-road connecting Ka Uka Boulevard to Palwa Street is discussed. Consideration should be given to the use of this road as a potential transit route.
9. The project should comply with Titles II and III of the Americans with Disabilities Act (ADA) and the ADA Accessibility Guidelines (ADAAG). All sidewalks and path curb ramps/cuts must comply with the ADAAG. It is anticipated that the project area will be served by TheHandi-Van. TheHandi-Van curb-to-curb paratransit service requires adequate turnaround space (or through travel) for its vehicles. Attached is additional information regarding ADA requirements for stadiums.

Mr. John P. Whelan
May 15, 1998
Page 3

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation System Planning Division at 527-6976.

Sincerely,


CHERYL D. SOON
Director

Attachment

cc: Mr. Warren Sato, Building Department

Mr. Gary Gill
Office of Environmental Quality Control

U.S. Department of Justice
Civil Rights Division
Disability Rights Section



Accessible Stadiums

The Americans with Disabilities Act (ADA) requires new stadiums to be accessible to people with disabilities so they, their families, and friends can enjoy equal access to entertainment, recreation, and leisure.

This document highlights key accessibility requirements of the ADA that apply to new stadiums. Other accessibility requirements, such as those for parking lots, entrances, and rest rooms, also apply but these are the same as for other buildings. Compliance with all the accessibility requirements is essential to provide a basic level of access for people with disabilities.

To obtain a copy of the requirements for new stadiums and other facilities, contact the Department of Justice ADA Information Line at (800) 514-0301 voice or (800) 514-0383 TDD.

Key Features of Accessible Stadiums

Seating

- Wheelchair accessible seating is required. At least one percent of the seating must be wheelchair seating locations. Each wheelchair seating location is an open, level space that accommodates one person using a wheelchair and has a smooth, stable, and slip-resistant surface.
- Accessible seating must be an integral part of the seating plan so that people using wheelchairs are not isolated from other spectators or their friends or family.
- A companion seat must be provided next to each wheelchair seating location. The companion seat is a conventional seat that accommodates a friend or companion.
- Wheelchair seating locations must be provided in all areas including sky boxes and specialty areas.
- Removable or folding seats can be provided in wheelchair seating locations for use by persons who do not use wheelchairs so the facility does not lose revenue when not all wheelchair seating locations are ticketed to persons who use wheelchairs.
- Whenever more than 300 seats are provided, wheelchair seating locations must be provided in more than one location. This is known as dispersed seating. Wheelchair seating locations must be dispersed throughout all seating areas and provide a choice of admission prices and views comparable to those for the general public.

- Wheelchair seating locations must be on an accessible route that provides access from parking and transportation areas and that connects to all public areas, including concessions, restaurants, rest rooms, public telephones, and exits.

- Wheelchair seating locations must provide lines of sight comparable to those provided to other spectators. In stadiums where spectators can be expected to stand during the show or event (for example, football, baseball, basketball games, or rock concerts), all or substantially all of the wheelchair seating locations must provide a line of sight over standing spectators. A comparable line of sight, as illustrated in the figure below, allows a person using a wheelchair to see the playing surface between the heads and over the shoulders of the persons standing in the row immediately in front and over the heads of the persons standing two rows in front.

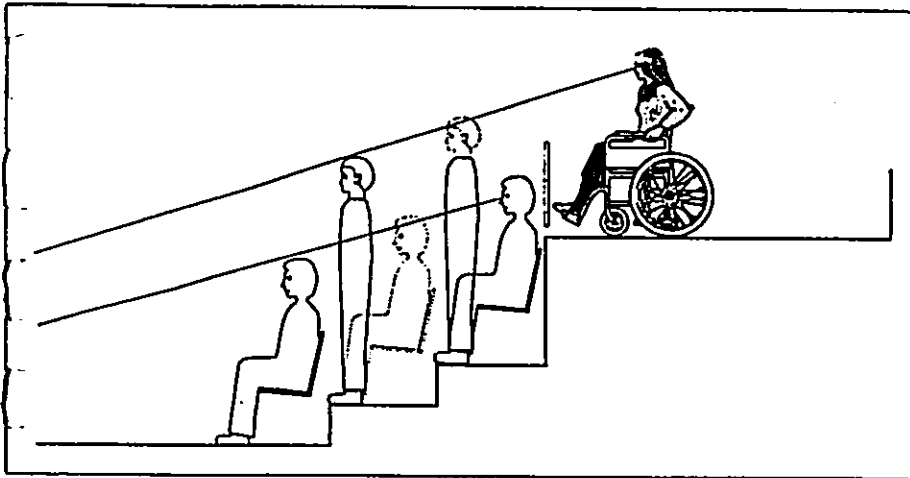


Figure Showing Comparable Line of Sight for Wheelchair Seating Location

- In addition to wheelchair seating locations, at least one percent of all fixed seats in all seating areas must be aisle seats with no armrest, or with a removable or folding armrest, on the aisle side. These seats accommodate people who have a mobility disability but who wish to use a seat that is not a wheelchair seating location.

- An accessible route must connect the wheelchair seating locations with the stage(s), performing areas, arena or stadium floor, dressing or locker rooms, and other spaces used by performers.

Concessions

- All concessions, including food service areas, restaurants, and souvenir stands, must be accessible. For example, lowered counters must be provided where goods are provided and where cash registers are located. Condiments and self-serve food items must be provided within reach of a person using a wheelchair.

Access to playing fields, lockers, and spaces used by players and performers

- An accessible route must provide access to all public and common use areas including the playing field, locker rooms, dugouts, stages, swimming pools, and warm-up areas. The accessible route provides access for the public, employees, and athletes using the facility.

Assistive Listening Systems

When audible communications are integral to the use of a stadium, assistive listening systems are required for people who are hard of hearing. These systems amplify sound and deliver it to a special receiver that is worn by the spectator, or to the spectator's hearing aid, depending on the type of system that is used.

- The stadium must provide receivers for the assistive listening system. The number of available receivers must equal four percent of the total number of seats.
- Signs must be provided to notify spectators of the availability of receivers for the assistive listening system.

Other Accessible Features

Accessible Parking Spaces

- When parking spaces are provided, accessible parking spaces for cars and accessible parking spaces for vans are required. Accessible parking spaces must be the closest parking spaces to the accessible entrances and must be on an accessible route to the entrances.

Accessible Drop-Off and Pick-Up Areas

- If passenger drop-off areas are provided, they must be accessible and an accessible route must connect each accessible drop-off area with the accessible entrance(s). Curb ramps must be provided if the drop-off area is next to a curb.

Accessible Entrances

- At least fifty percent of the entrances must be accessible. Those that are not accessible must have signs that direct the public to the nearest accessible entrance.
- Accessible entrances that have turnstiles must provide an accessible gate or door.

Rest Rooms

- Each public and common use (including employee) rest room must be accessible. This includes rest rooms in work areas and rest rooms located in sky boxes and suites.

Public Telephones

- Each bank of public telephones must have one or more wheelchair accessible telephones and these and other public telephones must have the ability to amplify the volume at the handset. A sign must identify telephones equipped with amplification.
- At least one public TDD (telecommunications device for persons who are deaf or who have speech impairments) must be provided. Signs must identify the location of the TDD and provide direction from other telephone banks.
- For each bank of public telephones with three or more units, at least one telephone must be equipped with a shelf and electrical outlet to permit a person to use a portable TDD.

Water Coolers or Drinking Fountains

- Drinking fountains must accommodate people who use wheelchairs and people who stand but have difficulty bending or stooping. Half of the units must be wheelchair accessible and the others must accommodate standing users.

Visual Alarms

- Where audible fire alarms or emergency notification is provided, flashing lights are required in public and common use areas, including toilet and bath rooms, locker rooms, and along public corridors.

Signs

- Signs that identify permanent rooms and spaces, such as those identifying rest rooms, exits or room numbers, must have Braille and raised letters or numbers so that they may be read visually or tactually (by feeling the characters with one's fingers). They must also meet specific requirements for mounting location, color contrast, and non-glare surface. Signs that provide direction to, or information, about functional spaces must only comply with requirements for character proportion, character height, and finish and contrast between the characters and background.

ADA Information Line

For more information about the ADA's design and construction requirements, contact the Department of Justice's toll-free ADA Information Line at 800-514-0301 (Voice) and 800-514-0383 (TDD). Detailed requirements can be found in the ADA Standards for Accessible Design. The ADA Standards and other useful technical assistance documents are available from the ADA Information Line.



July 14, 1998

Cheryl D. Soon, Director
Department of Transportation Services
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Dear Ms. Soon:

Draft Environmental Impact Statement for Central Oahu Regional Park (formerly Waiala Regional Park and Sports Complex)

Thank you for your letter concerning the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. The civil engineer for Phase 1 design will consult with your department on the alignments and cross-sections for the internal roads to be built in that phase.
2. The internal park roads will be assumed to remain under the jurisdiction of the Department of Parks and Recreation until such time as the roads are either dedicated as public thoroughfares or used as access roads to a park-and-ride lot or similar public transit facility, or there is a reorganization or reassignment of the responsibilities of City agencies as directed by either the Mayor or an amendment to the City Charter.
3. The final conceptual master plan for the park shows a more dispersed arrangement of parking areas than the does plan which appeared in the DEIS. The updated plan will be included in the FEIS. Also, the internal roadway system will be interconnected to facilitate dispersal of traffic after a major event.
4. Your comments on the adequacy of the scope of the Transportation Impact Assessment Report (TIAR) are noted.
5. A temporary bikeway could be constructed in the easement for the future Paiwa Street extension. This portion of the site is not within Phase 1, which is presently in design. While it is probably not necessary to show the interim bikeway on the conceptual master plan map, your suggestion will be mentioned in the FEIS as a proposed component of Phase 2. Perhaps dedicated bikeway funds could be used for this purpose.
6. Thank you for correcting the information on the Royal Kunia park-and-ride lot. I regret the error.
7. The TIAR assumed that trips generated by the project would be made by passenger cars. No reduction was made due to transit usage.

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DEPARTMENT OF WASTEWATER MANAGEMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 527-6623 • FAX: (808) 527-6673



KENNETH E. SPRAGUE, P.E., Ph.D.
DIRECTOR
CHERYL R. GAUMA SEPE, ESQ.
DEPUTY DIRECTOR

In reply refer to:
WCC 98-94

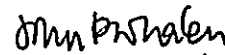
May 1, 1998

JEREMY HARRIS
DATE

The park-and-ride lot is not proposed as traffic mitigation due to the impacts from Central Oahu Regional Park. The DEIS intended to point out only that the creation of a large parking lot adjacent to Kamehameha Highway presented an opportunity to jointly use it as a commuter park-and-ride lot in the future if the demand exists. If the park-and-ride concept is pursued, its impacts would need to be analyzed as a separate study.

8. The future Paiwa Street extension may be a desirable transit route, but this is a matter that should be investigated as part of the planning and design of the roadway project.
9. Thank you for the information on accessibility guidelines. These will be forwarded to the design team for Phase 1, which, incidentally, will not include the stadium.

Sincerely,


John P. Whalen, AICP

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

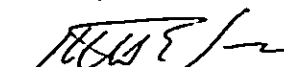
Subject: **DRAFT ENVIRONMENTAL IMPACT STATEMENT
WAIOLA REGIONAL PARK AND SPORTS COMPLEX
TMK: 9-4-05: 74**

The municipal wastewater system is available and adequate to accommodate the proposed project. However, please include your calculations to justify the projected peak wastewater flows. The Waiola Regional Park and Sports Complex totals approximately 269 acres, and will include baseball, tennis, basketball/volleyball, and football/soccer facilities. Additional areas will be set aside for a boxcar racing track, skateboard bowls, and in-line hockey courts.

This statement shall not be construed as confirmation of sewage capacity reservation. Sewage capacity reservation is contingent on submittal and approval of a "Sewer Connection Application" form. This project is liable for payment of a Wastewater System Facility Charge.

If you have any questions, please contact Ms. Tessa Ching of the Service Control Branch at 523-4956.

Sincerely,


KENNETH E. SPRAGUE
Director

cc: Mr. Warren Sato, Building Dept.
Mr. Gary Gill, State Office of Environmental Quality Control



July 14, 1998

Kenneth E. Sprague, Director
Department of Environmental Services
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Sprague:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

The calculations of projected peak wastewater flow that you requested are enclosed.

Sincerely,

John P. Whalen, AICP

Attachment

Waiala Sports Complex Wastewater Calculations

WET WEATHER VI: Assume a tributary width of 50 feet for gravity wastewater lines. Low Pressure Sewer Systems are under pressure and do not have infiltration/inflow from groundwater.

$$\text{Tributary Area (AC)} = \text{Length (L.F.)} \times 50' / 43,560$$
$$\text{Wet Weather VI} = \text{Tributary Area (AC)} \times 1,250 \text{ (gpd/AC)}$$

PHASE	L.F.	TRIB. AREA	WET VI
I	3,500	4.02 AC	5,022 gpd
II	2,950	3.39 AC	4,233 gpd
III	1,950	2.24 AC	2,798 gpd
IV	1,000	1.15 AC	1,435 gpd
TOTAL		11 AC	13,487 gpd

DESIGN PEAK FLOW: Sum of the design maximum wastewater flow and the wet weather VI rate.

PHASE	DESIGN PEAK
I	15,831 gpd
II	22,148 gpd
III	9,300 gpd
IV	22,685 gpd
TOTAL	69,762 gpd

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3/31/98

Page 4

**Waiola Sports Complex
Wastewater Calculations**

DESIGN FLOWS: See "Average Daily Wastewater Demand" calculations, attached.

AVERAGE WASTEWATER FLOW: See "Average Daily Wastewater Demand" calculations, attached.

MAXIMUM WASTEWATER FLOW: Average Wastewater Flow x 5 (Max. Flow Factor)

PHASE	MAX. FLOW
I	9,985 gpd
II	18,860 gpd
III	6,120 gpd
IV	20,000 gpd
TOTAL	52,965 gpd

DRY WEATHER INFILTRATION/INFLOW: Above groundwater. Assume that the "equivalent population" is the average wastewater flow divided by 80 gpd. This gives a "per capita" value for use in the standard formula "Dry Weather I/I = 5 gpcd"

PHASE	EQUIV. POP.	DRY I/I
I	125	624 gpd
II	211	1,054 gpd
III	77	383 gpd
IV	250	1,250 gpd
TOTAL	662	3,310 gpd

DESIGN AVERAGE FLOW: Sum of the average wastewater flow and the dry weather I/I rate.

PHASE	DESIGN AVE.
I	2,621 gpd
II	4,426 gpd
III	1,607 gpd
IV	5,250 gpd
TOTAL	13,903 gpd

DESIGN MAXIMUM FLOW: Sum of the maximum wastewater flow and the dry weather I/I rate.

PHASE	DESIGN MAX.
I	10,609 gpd
II	17,914 gpd
III	8,503 gpd
IV	21,250 gpd
TOTAL	56,275 gpd



May 5 1998

Mr. John P. Whalen
PLANPACIFIC
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Thank you for sending the Draft Environmental Impact Statement (DEIS) for the proposed Waiola Regional Park and Sports Complex.

As stated in our letter of February 18, 1998 in regard to the EISPN, we have strong concerns that the project does not include the through road connection of Paiwa Street with Ka Uka Boulevard. Traffic in the project area is a critical consideration for the Mililani community, and the exclusion of the Paiwa Street extension prevents the comprehensive assessment of regional access and circulation issues. In addition, the lack of a throughroad and more appropriately located and sized parking facilities, for example, will force patrons to find parking in nearby Gentry-Waipio and Paiwa Street residential neighborhoods during peak Park usage.

Failure to consider the Paiwa Street extension also raises the following questions regarding the efficacy of the Traffic Impact Assessment Report (TIAR) included in the DEIS:

1. The placement of parking and bus service facilities would probably not be the same as shown in the DEIS.
2. Traffic projections at the three (3) intersections studied in the TIAR could be significantly altered if and when the Paiwa Street extension road is constructed.
3. Without consideration of the Paiwa Street extension, the TIAR places an overdependence on Kamehameha Highway for access to the park. This in turn would stress the traffic projections for intersection of Kamehameha Highway and Lumiaina Street.
4. The unacceptable Levels of Service noted in the TIAR could be mitigated in keeping with community expectations when considered within the context of the Paiwa Street extension.



For these reasons, the DEIS could be misleading and influence the development of the park in a manner that would be costly and disruptive to remedy when the Paiwa extension is indeed constructed. As such, we continue to believe that a thorough analysis of the Paiwa Street extension and its influence on traffic projections, parking, bus service, and facility layout should be included in the TIAR.

Thank you for the opportunity to comment on the DEIS.

Sincerely,


Richard G. Poirier
Chair

- c. Mayor Jeremy Harris
Rene Mansho, Councilmember
Cliff Laboy, Mililani Recreation Advisory Council
Roy Doi, Mililani Mauka Neighborhood Board No. 35
Annette Yamaguchi, Waipahu Neighborhood No. 22
Ben Lee, Chief of Staff
Malcom Tom, Department of the Budget
Pat Onishi, Department of Planning
William Balfour, Department of Parks and Recreation
Cheryl Soon, Department of Transportation Services
Warren Sato, Department of Transportation Services
Kazu Hanyashida, State Department of Transportation
Rick Egged, State Department of Business, Economic Development, & Tourism
Gary Gill, State Office of Environmental Quality Control
Esther Ueda, State Land Use Commission



July 14, 1998

Richard G. Poirier, Chair
Mililani/Waipio/Melemanu Neighborhood Board No. 25
c/o Neighborhood Commission
350 South King Street, Room 400
Honolulu, Hawaii 96813

Dear Mr. Poirier:

Draft Environmental Impact Statement (EIS) for Central Oahu Regional Park (formerly Walola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. Transportation issues were carefully considered in the development of the conceptual master plan for the park. The design team for the park held review meetings with the Department of Transportation Services' key staff and Director to discuss the alignment and configuration of the proposed Paiwa Street extension; the potential eligibility of the Paiwa Street extension project for federal funding; the parkway design concept for this portion of Paiwa Street, including preliminary sketches of typical right-of-way sections and elevations; the location and number of parking lots and parking spaces; bikeway and pedestrian routes and designs; and the location and design of bus loading areas, in anticipation of possible future shared use of the main parking lot as a commuter park-and-ride facility.

The proposed parking ratio compares favorably with the City and County's other regional parks and with parking demand studies that have been conducted for sports facilities similar in type and size to those that are proposed for Central Oahu Regional Park. There is plenty of room to expand parking capacity by at least 50 percent, if it is really needed. The final conceptual master plan, completed about three weeks after the publication of the Draft EIS, shows a somewhat more dispersed pattern for parking within the park. However, nearly half of the spaces are still located in the main parking lot along Kamehameha Highway, not only for its proximity to a major arterial and the only current bus route in the vicinity, but also because the park facilities which are expected to generate the greatest parking demand — namely, the baseball stadium and other playfields — are situated nearby. In this respect, the arrangement of parking spaces is designed for the convenience of park users because principal facilities and activity areas are within convenient walking distance of the

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Letter to Richard G. Poirier
July 14, 1998
Page 2

bus loading areas and main parking lots and conflicts between vehicles and pedestrians and bicyclists within the park are minimized.


2. The traffic projections would be different if a through-road were present. However, the traffic volume projections on such a through-road would consist not only of park users, but also a large number of non-park users who would use it as a "shortcut" to Kamehameha Highway. Without the through-road, only park users would be entering/exiting the project site via Ka Uka Boulevard, Waipio Uka Street and Paiwa Street.

The Paiwa Street entry will be open during normal park hours. It is the internal circulation road that will be gated to prevent it from being used as a *de facto* through-road. The narrative in the Draft EIS was misleading on this point; it will be corrected in the Final EIS.

3. The Traffic Impact Assessment Report (TIAR) to be included in the Final EIS expands the analysis to include the Lumiala Street, Lumisauu Street and Waipahu Street intersections with Kamehameha Highway and the Paiwa Interchange at the H-1 Freeway. The revised TIAR recommends the addition of a second left-turn lane on the Paiwa Interchange eastbound off-ramp to accommodate the increased amount of traffic during the weekend peak period of traffic generated by the park at full development. The spectator sports facilities - particularly the baseball and tennis complexes - are the primary generators of this peak traffic, so the interchange improvement will be needed as a mitigation measure only when these facilities are developed.

4. The traffic analysis in the TIAR shows that the anticipated peak hour traffic volumes generated by the proposed project do not create the need for the Paiwa Street extension. This is despite a very conservative assumption that all trips to the park would be by private passenger vehicle. In reality, it should be expected that at least a portion of park users would arrive and depart by municipal or private chartered bus or by bicycle or foot. When the proposed Paiwa Street extension is designed and built, it could be done in such a way as to improve bus service, as well as pedestrian and bicycle access to the park. The conceptual master plan for the park is flexible enough to accommodate this. A 120-foot wide easement for the future road is provided so that it can be designed as a landscaped "parkway", with ample room for separated bikeways and walkways and pullouts for bus stops. The only portion of the park presently in construction design is Phase I at the southeastern sector of the site, which does not include the vicinity of the future through-road.

Sincerely,


John P. Whalen, AICP

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 8TH FLOOR • HONOLULU, HAWAII 96813-3017
PHONE: (808) 523-4523 • FAX: (808) 523-4560

JEREMY HARRIS
MAYOR



PATRICK T. O'NEILL
CHIEF PLANNING OFFICER
DUNAL HANAIRE
DEPUTY CHIEF PLANNING OFFICER

ET 3/98-0683

May 1, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Draft Environmental Impact Statement
for Waiola Regional Park and Sports Complex

Thank you for giving us the opportunity to review the Draft Environmental Impact Statement (DEIS) for the proposed Waiola Regional Park and Sports Complex Project. We have reviewed the subject document and offer the following comments:

- The Final Environmental Impact Statement (FEIS) should include the following:
 - 1) statement of purpose and need for action;
 - 2) list of parties consulted (e.g. government agencies, organizations, and private individuals); and
 - 3) EIS document distribution list.
- The FEIS should provide information on the estimated size of proposed structures (e.g. height).
- The FEIS should also clarify which of the proposed facilities are anticipated to be funded by the private sector and who will operate and maintain these facilities.

Mr. John P. Whalen, AICP
PlanPacific, Inc.
May 1, 1998
Page 2

Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

Yours very truly,


PATRICK T. ONISHI
Chief Planning Officer

PTO:lh

c: Building Department
OEQC



July 14, 1998

Patrick T. Onishi, Chief Planning Officer
Planning Department
650 South King Street, 8th Floor
Honolulu, Hawaii 96813

Dear Mr. Onishi:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)**

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. The items you listed will be included in the Final Environmental Impact Statement (FEIS).
2. The Conceptual Master Plan, dated March 31, 1998, envisions single-story structures with a hip roof form. Sketches of the architectural character of principal and typical buildings will be included in the FEIS. Depending on the footprint of the building and the pitch of the roof, heights from grade to roof ridgeline could range between 20 to 45 feet. The baseball stadium, depicted conceptually as a three-tiered grandstand, is likely to be the tallest structure within the park, reaching a height of about 60 feet. However, the stadium may be smaller, depending on the response the City receives from the private sector for the development and operation of this and other sports facilities in the park, as discussed below.
3. Currently, the following facilities are proposed to be built and operated with private sector participation:
 - Baseball complex, including stadium, three ballfields designed for professional play, a practice infield, four youth ballfields and four softball fields;
 - Tennis center, including stadium, clubhouse, four show courts and sixteen standard courts;
 - Sports training building;
 - Boxcar racing stadium;
 - Aquatics center, including three pools and support building;

In-line hockey facility with four paved courts. Specific information on the amount and type of private sector participation will not be available until the City receives and selects proposals through the procurement process.

Sincerely,

217 Duane Street
Suite 1520
Honolulu
Hawaii 96813

John P. Whalen, AICP

Tel: (808) 521-9418
Fax: (808) 521-9448

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 528-3111



LEE D. DONOHUE
ACTING CHIEF

WILLIAM D. CLARK
DEPUTY CHIEF



July 14, 1998

James Femia, Assistant Chief
Administrative Bureau
Honolulu Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Femia:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

The Final EIS will include the information you provided about the anticipated need for additional police service related to the park.

Sincerely,

John P. Whalen
John P. Whalen, AICP

JEK
Y HARRIS
AYOR

OU
REFERENCE CS-DL

April 14, 1998

Mr. John P. Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Waiola Regional Park and Sports Complex, TMK: 9-4-05:074.

We are pleased to note that police concerns are being voiced and addressed through representatives of the Honolulu Police Department who are members of the Community Recreational Facilities Working Group. As a result, we trust that the concepts of crime prevention through environmental design will be followed to minimize potential criminal activity in the area.

We have also noted that potential traffic problems within and outside the complex as well as potential dust and noise problems during and after construction have been addressed in the document.

However, when the size of the proposed complex and the types of planned activities are considered, there will be an anticipated increase in calls for service as a direct result. Therefore, we expect that the addition of at least one cushion beat or five additional officers will be required initially for adequate coverage and response. As the proposed complex is expanded, we will likewise continue to evaluate our needs for additional staffing.

Should you have any questions, please call Major Michael Martinez of District 3 at 455-9055.

Sincerely,

LEE D. DONOHUE
Acting Chief of Police

By *James Femia*
JAMES FEMIA
Assistant Chief
Administrative Bureau

cc: Mr. Warren Sato
City Building Department

Mr. Gary Gill
State Ofc. of Environmental Quality Control

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel (808) 521-9118
Fax (808) 521-9168

HERMAN M. AIZAWA, Ph.D.
SUPERINTENDENT



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

HERMAN M. AIZAWA, Ph.D.
SUPERINTENDENT



PLANPACIFIC

OFFICE OF THE SUPERINTENDENT

April 3, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

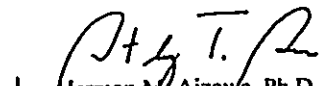
Dear Mr. Whalen:

Subject: Waiola Regional Park and Sports Complex Draft EIS

The Department of Education has no comment on the subject draft environmental impact statement.

We will coordinate with the Department of Parks and Recreation on use of facilities for area schools and Oahu Interscholastic Association league play.

Sincerely,


Herman M. Aizawa, Ph.D.
Superintendent

HMA:hy

cc: A. Suga, OBS
A. Hokama, CDO
W. Sato, PlanPacific, Inc.
G. Gill, OEQC

July 14, 1998


Herman M. Aizawa, Superintendent
State of Hawaii Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Dr. Aizawa:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)**

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Sincerely,


John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9448



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

May 6, 1998

97-023B/epo

LAWRENCE MURPHY
DIRECTOR OF HEALTH

NO COPY, PLEASE REFER TO

Mr. John Whalen, AICP
May 6, 1998
Page 2

97-023B/epo

If you have any questions concerning these drinking water comments, please contact Mr. Mark Yonamine of the Safe Drinking Water Branch at 586-4258.

Wastewater

As the area is sewerred and accommodations will be made to handle the additional wastewater, we have no objections to the park proposal as long as wastewater is handled through the City and County of Honolulu's sewer system.

Should you have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at (808) 586-4294.

Fugitive Dust Concerns

Due to the nature of the project, there is a significant potential for fugitive dust to be generated during the removal of debris and during the grading, excavating and construction activities that would impact residential and business establishments and nearby thoroughfares. It is suggested that a dust control management plan be developed which identifies and addresses activities that have a significant potential for fugitive dust to be generated. Implementation of adequate dust control measures during all phases of the project is warranted.

Construction activities must comply with provisions of Chapter 11-60.1, Hawaii Administrative Rules, section 11-60.1-33 on Fugitive Dust. The contractor should provide adequate means to control dust from road areas and during the various phases of construction activities.

If you have any questions regarding fugitive dust, please contact Mr. Ronald Ho of the Clean Air Branch at 586-4200.

Noise Concerns

Although it is stated in the DEIS that no significant amount of noise should be generated by group activities, such as the 4,000-seat baseball stadium or the boxcar stadium, potential noise disturbances may result in the residential areas that border the facilities. Noise due to increased vehicular traffic may also create disturbances.

Mr. John Whalen, AICP
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement (DEIS)
Waiola Regional Park and Sports Complex
Central Oahu
Ewa Judicial District
TMK: 9-4-05: 074

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Drinking Water

The draft EIS indicates that the potable water for the park will come from an existing Board of Water Supply (BWS) reservoir and the park irrigation demand will be met by non-potable water sources.


In a dual water system, the potable and non-potable systems must be carefully designed and operated to prevent cross-connections and backflow conditions. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow preventers to avoid contaminating the potable water supply. Also, annual testing for the reduced pressure principle backflow preventor will be required. All non-potable spigots and irrigated areas should be clearly labeled with warning signs to prevent the inadvertent consumption of nonpotable water. In addition, non-potable spigots should be installed in secured, below-grade enclosures.

Mr. John Whalen, AICP
May 6, 1998
Page 3

97-0238/epo

Should there be any questions on this matter, please contact
Mr. Jerry Haruno, Environmental Health Program Manager, Noise,
Radiation and Indoor Air Quality Branch at 586-4701.

Sincerely,


BRUCE S. ANDERSON, Ph.D.
Deputy Director for
Environmental Health

c: SDWB
WHB
CAB
NR&IAQB
Warren Sato (C&C of Honolulu)
OEQC



July 14, 1998

Dr. Bruce S. Anderson, Deputy Director for Environmental Health
State of Hawaii Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the
project name was changed by the City Council in its recent approval of the
construction budget for Phase I to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your
letter:

1. Drinking Water

Your precautions concerning the design and operation of dual systems for
potable and non-potable water have been noted and forwarded to the
consultants and City agencies who will design, approve and maintain the
systems. They intend to proceed as you advise.

2. Wastewater

The project will be connected to the municipal sewer system according to
plans which will be reviewed and approved by the City's Department of
Environmental Services and your department.

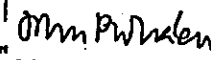
3. Fugitive Dust Concerns

At each phase of project development, the grading plans, including notations
on dust control measures, will be submitted to your department for review
and prior to the issuance of the construction permit by the City's
Department of Planning and Permitting.

4. Noise Concerns

An environmental noise impact assessment was conducted in anticipation of
your concerns. While the assessment report was not included in the DEIS,
we are enclosing a copy of it for your review at this time. The report will be
incorporated in the FEIS and its recommendations will be followed in the
design and operation of facilities in the park.

Sincerely,


John P. Whalen, AICP

717 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9468



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

HONOLULU DEVELOPMENT
PROGRAM
PLANNING
PLANNING AND URBAN RECREATION
LEASING AND
RESOURCE ENFORCEMENT
CONSERVATION
FORESTRY AND WILDLIFE
WATER RESOURCES
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT



May 11, 1998

LD-NAV
Ref.: SPORTWRP.RCM

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

SUBJECT: Review : Draft Environmental Impact Statement
Applicant: City and County of Honolulu
Project : Waiola Regional Park and Sports Complex
Location : Waipio, Central Oahu, Hawaii
TMK : 1st/ 9-4-05: Parcel 74

Thank you for the opportunity to review and comment on the proposed project.

Our Division of State Parks has commented that the subject plan generally follows the September 1995 Conceptual Master Plan for Waiola Park by DLNR, including the recommendations that the park be administered by the City and County of Honolulu. The subject proposal does not conflict with State Parks interests.

The Department of Land and Natural Resources has no other comments to offer on the subject matter at this time. Should you have any questions, please contact Nicholas Vaccaro of our Land Division Support Services Branch at 587-0438.

Very truly yours,

DEAN Y. UCHIDA
Administrator

cc: Oahu District Land Office
Oahu Land Board Member

July 14, 1998

Dean Y. Uchida, Administrator
Land Division
State of Hawaii Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Sincerely,

John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

TEL (808) 521-9418
FAX (808) 521-9468

HELEALUANI J. CAVETANO
11/16/1983



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

May 7, 1998

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRIAN K. IMAI
GLENN H. OKAMOTO

IN REPLY REFER TO:
STP 8.8561

STP 8.8561

Mr. John P. Whalen
Page 2
May 7, 1998

We will defer any further comments until we get an opportunity to review the revised TIAR.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

c: Mr. Warren Sato, City and County of Honolulu Building Department
Mr. Gary Gill, Office of Environmental Quality Control

Mr. John P. Whalen
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Waiola Regional Park and Sports Complex
Draft Environmental Impact Statement (EIS)
TMK: 9-4-05: 074

Thank you for your transmittal of March 18, 1998.

Our comments are as follows:

1. A revised Traffic Impact Analysis Report (TIAR) should be submitted for review and approval.
 - a. The TIAR limits its discussion to the intersections. A project of this magnitude would have regional impacts and these should be addressed (i.e., Kamehameha Highway, Ka Uka Boulevard to H-1; Waiawa Interchange, particularly the eastbound and westbound ramps to Paiwa Street).

Mitigative measures, such as the implementation of the connector road between Paiwa Street and Ka Uka Boulevard, should be discussed.
 - b. The TIAR should be revised to accurately reflect the highway network and base traffic conditions. Also, the traffic forecasts should be consistent with the Oahu Regional Transportation Plan (as opposed to the sole use of extrapolations from historical data). This could significantly affect the analyses and recommendations.
2. Plans for construction work within the State highway right-of-way must be submitted for our review and approval.



July 14, 1998

Kazu Hayashida, Director
State of Hawaii Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hayashida:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)**

Thank you for your letter concerning the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. Benson Chow of Pacific Planning & Engineering (PP&E), who prepared the Transportation Impact Assessment Report (TIAR), clarified in telephone conversations with Doug Meller and Elton Teshima of your department that you had meant to request an expanded analysis to include the ramps for Paiwa Interchange rather than the Waiala Interchange as stated in your letter. On that understanding, PP&E has begun study of the following additional locations to be included in the revised TIAR:
 - Paiwa Interchange - Eastbound off-ramp, Westbound off-ramp
 - Kamehameha Highway with Lumaina Street
 - Kamehameha Highway with Lumiauau Street
 - Kamehameha Highway with Waipahu Street
2. The TIAR examined the traffic impacts of the proposed park project on the surrounding roadway network. The traffic analysis shows that the anticipated peak hour traffic volumes of the proposed project does not generate the need for a connector road. Mitigative measures to accommodate the forecasted traffic volumes are recommended in the TIAR. Furthermore, the Oahu Regional Transportation Plan (ORTP) lists the connector road as a long-term project slated for construction in the 2006-2020 time frame.
3. Inaccuracies in the description of roadways and lanes will be corrected in the revised TIAR.
4. The ORTP was reviewed and considered in the preparation of the TIAR for this project; however, the historical growth rate was used as the basis for assessing traffic impacts for the following reasons:

- The ORTP provides traffic projections for the year 2020, but not for interim years. Since Central Oahu Regional Park is expected to be completed prior to 2020, we attempted to estimate traffic projections for a year closer to the completion of the park in order to more accurately describe its impacts on the regional transportation system.
- The historical growth rate was estimated at +2% per year. If a linear growth rate is assumed for the ORTP's traffic forecast for 2020, the annualized rate would be less than +2% per year. While we realize that the ORTP forecast does not assume a linear growth rate, we believe our method yields a higher traffic estimate for the year 2005 and is therefore a reasonable basis for evaluating the "worst case" scenario.

Sincerely,

John P. Whalen
John P. Whalen, AICP

217 Bishop Street
Suite 1520
Honolulu
Hawaii 96813
Tel: (808) 521-9438
Fax: (808) 521-9168



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 587-3822
Fax: 587-3827

March 27, 1998

Mr. John P. Whalen
PlanPacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement (DEIS) for
the Waioloa Regional Park and Sports Complex,
Waipahu, Oahu, THK 9-4-05: 74

We have reviewed the DEIS for the subject project transmitted by your letter dated March 18, 1998, and have no additional comments to offer to our previous letter on the Environmental Impact Statement Preparation Notice for the subject project except to point out that based on the descriptions listed in Exhibit 4 of the DEIS, the project appears to require a special permit or boundary amendment. We note that Section 5.2.1. of the DEIS entitled "State Land Use" (p.31) incorrectly states that the project is a permitted use within the Agricultural District.

Furthermore, in view of the intensity of the proposed uses and location of the project, a boundary amendment may be more appropriate.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject DEIS.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:th

cc: Warren Sato, C&C of Honolulu Bldg. Dept.
Gary Gill, OEQC
OP



July 14, 1998

Esther Ueda, Executive Officer
State of Hawaii Land Use Commission
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Ms. Ueda:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waioloa Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

The erroneous statement on page 31 of the DEIS concerning the use regulations for the State Agriculture District will be corrected in the FEIS. I regret the oversight.

The City does intend to petition the State Land Use Commission for a boundary amendment to include the entire project site in the State Urban District. In the long term, this seems to be the most appropriate designation. I have been informed, however, that the City intends to proceed with the construction of Phase I prior to the boundary amendment, based on a legal opinion that the improvements in this phase fall under the definition of permissible uses in the State Agricultural District pursuant to Section 205-4.5(6), Hawaii Revised Statutes.

Sincerely,

John P. Whalen, AICP

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

TEL: (808) 521-9410
FAX: (808) 521-9455

ENJAMIN J. CAYetano



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

236 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 522-4185
FACSIMILE (808) 522-4186

May 7, 1998

GARY GILL
DIRECTOR



Honorable Randall Fujiki, Director
Building Department, City and County of Honolulu
ATTENTION: Mr. Warren Sato
630 South King Street, 2nd Floor
Honolulu, Hawai'i 96813

Dear Mr. Fujiki:

We submit for the following comments on the draft environmental impact statement for the Waiala Regional Park and Sports Complex, TMK 9-4-05-074, Ewa Judicial District, O'ahu.

1. **LOSS OF AGRICULTURAL LAND.** Please discuss direct, indirect and cumulative impacts of the conversion of agricultural lands to urban use.
2. **SOILS AND GROUNDWATER.** The DEIS notes that herbicides and pesticides may be present in the ground from past agricultural uses; construction/demolition debris, and municipal solid waste are also present at several areas of the site; and, a soils study will be performed. In the soils study, please assess the nature and extent of any subsurface contamination, including groundwater, and include such a study in the FEIS.
3. **WATER CONSUMPTION.** Please discuss the park's demand for potable and non-potable water and any impact it will have on the supply of water currently designated or planned for agricultural purposes in the leeward area.
4. **WATER QUALITY.** Please discuss the short-term and long-term indirect and cumulative effects of the park on water quality in streams, and in Pearl Harbor.
5. **CUMULATIVE IMPACTS.** Please discuss cumulative impacts in light of at least two other planned sports complexes at Barber's Point and East Kapolei.

Please include a copy of this letter, all timely-received comment letters and your responses in the final environmental impact statement for this project. If there are any questions, please call Mr. Leslie Segundo, Environmental Health Specialist at 586-4185. Thank you.

Sincerely,

GARY GILL
Director of Environmental Quality Control

cc: John P. Whalen, AICP, PlanPacific Inc.

July 14, 1998

Gary Gill, Director
Office of Environmental Quality Control
236 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Mr. Gill:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. There is no direct impact resulting from the conversion of this land from an agricultural to an urban use classification because the current owner (Castle & Cooke) discontinued agricultural use before the City announced plans to acquire the site for the park. Indirect and cumulative impacts of the land conversion were discussed in the Draft Environmental Impact Statement (DEIS). However, we will supplement this section by addressing the potential indirect impacts on the land values of other agricultural lands in the region and on the recharge of the underlying aquifer. With respect to the first issue, we do not anticipate a "benchmark" effect on the market value of nearby agricultural parcels because this site is being acquired by eminent domain for a specific public purpose, not for speculation on future urban uses, and the sale price will be established through a process which is quite distinct from land transactions between private entities. As to the second issue, the recharge efficiency of the site will be retained because most of the site will continue to be free of impervious surfaces, similar to current conditions.
2. The amount of construction debris and other solid waste encountered on the site was very small and of recent origin; i.e., since active cultivation has been discontinued. It does not threaten to contaminate groundwater unless the site remains in an unused state and becomes a *de facto* dumping ground over the long term. A "phase I" environmental analysis of the site was conducted after the DEIS was published. The findings and recommendations of this analysis will be included in the FEIS.

3. The park's projected demand for potable and non-potable (irrigation) water was discussed in the DEIS, Section 1.9.4. The park's irrigation needs will not compete with those of agricultural users. If Waiahole Ditch is the source, the allocation will probably come from the 5.39 MGD which the

737 Bishop Street
Suite 1520
Honolulu
Hawaii 96813

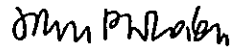
For (808) 521-9418
Fax (808) 521-9448

Letter to Mr. Gary Gill
July 14, 1998
Page 2

Commission on Water Resource Management set aside for "beneficial uses" of the "non-permitted groundwater buffer" rather than the 11.93 MGD which the Commission allocated to agricultural and golf course uses. If reclaimed effluent is used for irrigation, it will be a new source which is not presently used for any purpose, including agriculture.

4. The drainage system will be designed and constructed according to the Best Management Practices recommended in *Hawaii's Coastal Nonpoint Pollution Control Program Management Plan* (June 1996) and City Council Resolution 94-296, which calls for no net increase in postdevelopment stormwater runoff, emphasizing onsite retention and detention of stormwater. Consequently, significant adverse impact on downstream conditions will be avoided.
5. The City is coordinating the development and phasing of the sports facility components of the park with the State's plans for sports complexes at Kapolei and Barbers Point. These sites are intended to be complementary rather than competitive or redundant. For example, prior to his trip to Japan in April to promote the sports industry on Oahu, Mayor Harris announced that construction of the baseball stadium at Central Oahu Regional Park would follow the lead of the State's Kapolei baseball complex and be built only if there is a commitment by the private sector to participate in the cost of its development and operation.

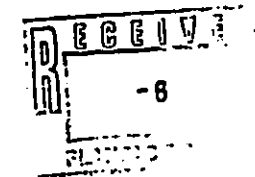
Sincerely,


John P. Whalen, AICP



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLAHU BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1885

April 01, 1998



Mr. John P. Whalen
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Doc. EIS 135

Subject: Draft Environmental Impact Statement (DEIS) for Waiola Regional Park and Sports Complex, Island of Oahu

Dear Mr. Whalen:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for Waiola Regional Park and Sports Complex, Island of Oahu. The City & County of Honolulu proposes to build a sports complex on lands owned by Castle and Cook, Inc. with the intent of providing Central Oahu residents with an array of sport facilities.

The Office of Hawaiian Affairs (OHA) has serious concerns to the proposed regional park and sports complex. Specifically, OHA finds the justification for the building of a sports complex facility weak when based on a lukewarm response of Oahu residents. The applicant states that Waiola residents are more eager than Oahu residents to use the proposed development.

Because of serious economic hardship afflicting Oahu and unless a feasibility study shows otherwise, perhaps it would be in the best interest of taxpayers to develop a park without a major sports complex at this time.

Letter to Mr. John P. Whalen
April 01, 1998
Page 2

If the City & County of Honolulu wants to pursue this venture, OHA would like to see baseline information supporting the need for such development with data indicating users, beneficiaries, and so on. It is also important for the City & County of Honolulu to specify clearly what is the intent of this sports complex. Is this a facility aimed to meet the needs of local residents or is being developed to provide the physical framework for a leading role of Hawaii in the international sports arena. If the latter is true, then the FEIS should better articulate the scope of the sports complex.

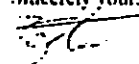
The Office of Hawaiian Affairs (OHA) is also concerned with the lack of specifics on water supply for the proposed park. Appendix A amounts to mere speculations on what water sources could be used without concrete evidences of amounts available for the park. This is one source of uncertainty that further weakens the overall feasibility of the project.

The irreversible loss of agricultural lands is a major concern of OHA. As unemployment rises, diversified agriculture is one feasible alternative to provide much needed economic relief. OHA fears that the use of prime agricultural lands for recreation facilities will further downsize the resource base available for diversified agriculture and will ultimately restrict the ability of residents to cope with economic hardship.

Overall, given the magnitude of the proposed development, OHA finds the DEIS brief and somewhat shallow in describing the need for a sports complex and elucidating potential adverse impacts.

Please contact Colin Kippen (594-1938), Officer of the Land and Natural Resources Division, or Luis A. Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,


Randall Ogata
Administrator

cc Board of Trustees


Colin Kippen
Officer, LNR



July 14, 1998

Randall Ogata, Administrator
Collin Kippen, Officer, LNR
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Messrs. Ogata and Kippen:

Draft Environmental Impact Statement (DEIS) for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. The DEIS did not state nor mean to imply that the proposed sports facilities elicited a "lukewarm" response from Oahu residents in the 1995 survey. Instead, the survey found islandwide support for the development of sports facilities at this location and an even more enthusiastic response from Central Oahu residents, probably due to the large number of households in this area with children engaged in youth athletic leagues. Since the primary purpose of this project is to serve as a regional park for the residents of Central Oahu, it is quite appropriate to incorporate the sports facilities in this park. This is clearly the sentiment of the elected public officials who represent the area and of the community representatives serving on the Mayor's task force for the planning of the park.
2. Mayor Harris has stated that sports facilities designed for professional training programs and exhibitions will be built only if there is private sector participation in the cost of developing and maintaining these facilities. The City Council apparently concurs with this position, based on its recent decision to exclude the baseball stadium from the construction funding for Phase 1 improvements. The City administration is currently preparing a solicitation for proposals from the private sector and will determine how to proceed after reviewing the results of this process.
3. All of the sources investigated by the water resources are potentially available and feasible to use for the project. However, the exact source cannot be identified at this time because any of the potential sources will require regulatory approval by the Commission on Water Resource Management, the Board of Water Supply and the Department of Health. These approvals cannot be obtained -- or even applied for -- until after the FEIS is accepted.

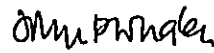
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Letter to Randall Ogata and Collin Kippen
July 13, 1998
Page 3

4. Some of the increase in unemployment is due to the loss of jobs in plantation agriculture, especially sugar cane and pineapple production, which is offset only partially by a rise in diversified agriculture. As stated in the DEIS, only 18,200 acres of the 131,430 acres (or approximately 14 percent of the land area) on Oahu in State Agricultural District are presently in crop production. The extent of agricultural lands in actual agricultural use has declined precipitously over the past decade.

Sincerely,


John P. Whalen, AICP



University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2350 Campus Road • Honolulu, Hawai'i 96822
Telephone: (808) 956-7341 • Facsimile: (808) 956-3980

May 07, 1998
RE:00686

Mr. John Whalen
Plan Pacific, Inc.
737 Bishop Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Draft Environmental Impact Statement
Waiola Regional Park and Sports Complex
Waiola, Oahu

The City and County of Honolulu Building Department and the Department of Parks and Recreation propose development of a 269-acre regional park and sports complex. The main positive impact of the proposed project is the provision of a regional park facility for Central Oahu with a wide variety of active and passive recreational opportunities for residents of the area. The original idea for the regional park has evolved from fields and trails to stadiums and complexes. Overall, the primary adverse impacts of the proposed project are loss of agricultural land, increased area traffic, increased noise, decreased local air quality, increased water consumption, and loss of some scenic views.

We reviewed this draft Environmental Assessment (EA) with the assistance of Paul Ekern, Agronomy and Soil Science Emeritus; James Hollyer, Agriculture and Resource Economy; Roger Babcock, Civil Engineering; and Tori Cullins of the Environmental Center.

Loss of Agricultural Lands

An error in the Table of Contents reads -- 2.1. Loss of Agricultural Land Lands. The footnote on page 21 is incorrect. The Hawaii Agricultural Statistics Service is not part of the University of Hawaii.

Although considerable amounts of agricultural land remain on Oahu and throughout the state, conversion of these lands to diverse use will raise land prices (both sale and rental) engendering far-reaching economic multipliers. The Final Environmental Impact Statement will need to address the impact of agricultural land use conversion in this context.

Water Consumption

The issue of what type of nonpotable water to use on the proposed park is adequately discussed on pages 9-11 based upon the findings in the report from Masa Fujioka & Associates.

Mr. John Whalen
May 7, 1997
Page 2

The short-term plan to use the Waipio Heights well water (for about three years) appears sound. However, this will only cover a portion of the anticipated construction period. As for long term needs, the plan identifies three components. One of these is a "temporary groundwater allocation." The other two components are 1) an application for an allocation of Waiahole ditch water and 2) construction of the park irrigation system to support the potential use of reclaimed water. This suggests that separate irrigation and potable water distribution must be constructed. Our reviewers recommend that the city make a strong commitment to the use of reclaimed water for irrigation of the proposed park. This project is a perfect example of a facility where a large volume of nonpotable water may effectively be utilized in an area where potable water is currently unavailable and given future growth projections, will always be scarce.

While an allocation from the Waiahole ditch system may be justified as a beneficial use, there can be no definitive indication that it is a better beneficial use than stream restoration on windward Oahu. The final decision of the Water Commission in the Waiahole contested case indicates that there "must be an increased emphasis on water conservation, water reclamation and reuse." This may mean that where available and appropriate, reclaimed water should be used instead of Waiahole water. The use of reclaimed water on parks is specified in the Department of Health (DOH) "Guidelines for the Treatment and Use of Reclaimed Water" as an appropriate and permitted use. The DOH guidelines provide protections needed to safeguard the underlying aquifer. The potential for contamination is greatly reduced when the guidelines are followed and irrigation is applied at a rate balanced by evapotranspiration and plant uptake (consideration should be given to the fact that the water balances may be greatly altered when pineapple culture with very low water demand is replaced by grasses with 10-fold greater water demands). Therefore, contaminants may only reach the aquifer during large rainfall events causing temporary incremental percolation. In addition, most if not all potable water wells in the vicinity of the Waiola park currently have or will soon have well-head GAC treatment systems for removal of pesticides. This constitutes an additional barrier to future potential, but unlikely, contamination related to irrigation. In summary, reclaimed water should be the top priority for irrigation of the proposed Waiola Park.

The Final Environmental Impact Statement will need to address the overall impact on the use of water for agriculture on the leeward side if the park is put in place.

Another impact to be addressed is that of drought. A worst case scenario should be identified with mitigation. Factors would include the top priority for water use in the case of drought. For instance, would production agriculture have top priority over other uses?

Page 33, Section 5.3.2, predicts that there will be no increase in the supply of homes because of this project, although it seems that the south side of the park would be an idea area for "park side" homes. How is this predication validated? What would be the cumulative impact on water use of the park if it acts as a catalyst for home construction? As the Sports Complex seeks to draw professional sports teams, where will the athletes live if a professional sports team

Mr. John Whalen
May 7, 1997
Page 3

decides to set up its winter camp there? What have been the impacts in other towns that have winter camps? Also, will the need for food establishments increase?

Drainage

Drainage and storm water discharge can be a major problem. Some of the current Mililani discharge flumes are inadequate. Hydraulic jump and undercutting at the discharge apron promise ultimate failure. Documents of Kipapa discharge show a 14 foot record rise on one occasion in the stream flow.

On page 13, Exhibit 10, only a portion of the lined diversion ditch is shown. It is clear that the portion of the lined ditch below the retention basin drains westward. It is not clear where the portion above the retention basin drains to. Does it drain into the retention basin or does it all drain (uphill?) to the upper eastern spot marked "conn. to exist. storm drain system"?

The discussion of groundwater aquifers (Page 9, Section 1.9.4.) underlying the site and how they are considered highly vulnerable should indicate the depth from the ground surface to the water table (approximately 250 to 350 feet). Seepage and possible groundwater pollution should be identified. The Mililani WWTP interfluvial has perching lenses in the strata evidenced by spring flows along the gulch walls.

Landscape

Once operational, the locations where grasscycling, composting and mulching will be done are not indicated. If not on site, it will be expensive to haul green trimmings off site. Will there be recycling of cans and bottles on site or designated containers for public and staff use?

Construction Phase

During the construction phase, while there will be fencing around the property, what is the plan to pick up litter that is generated inside of the fencing?

Transportation Facilities and Traffic

On page 1, second column, the third bullet in the second list is incorrect. It reads "One shared through/right-turn ... Ka Uka Boulevard", but it should read "Waipio Uka Boulevard." This same error is repeated on page 22. On page 2, Waipio Uka Street is missing on the right-side location map.

On page 18, the proposed park reserves an easement for connection of Ka Uka Boulevard and Paiwa Street as shown in the Oahu Regional Transportation Plan (map is shown as Exhibit 13, page 20). However, if that plan is the basis for including an easement for

Mr. John Whalen
May 7, 1997
Page 4

connecting those two streets, why isn't an easement also provided for the proposed connection to Kunia Road as also shown in the plan map? The potential alignment shown in Exhibit 13 for that road is not preserved, because structures are to be located there. This potentially calls into question the need for the easement that is provided.

The proposed use allocations and total number of parking stalls are given in Exhibit 4, page 5. The total number of parking stalls for the proposed park is clearly given as 2,744. In addition, an additional 1,000 cars could apparently be parked on grassed areas during large events. A couple of things are not clear. First, which grassed area would be used for car parking, and if it is the grassed area where the through-road easement is proposed, what will happen when or if the through-road becomes completed? Second, and more importantly, it is very difficult to determine from this document exactly how many persons are expected to use this park. For example, how many permanent seating facilities are to be provided? Our reviewers counted over 8000 permanent seats projected. Without a projection of the total amount of seating or other projections of the number of potential park users, it is difficult to assess the adequacy of proposed parking facilities, the potential for traffic problems, the levels of potential noise generation, and the peak wastewater flows.

Public Safety

On pages 18-19, exactly where is the proposed new police substation to be located? Is this new substation already planned, and if so where is such a plan documented? When is the proposed substation to be constructed or occupied? It does seem that the large numbers of potential park users will necessitate additional police presence in the area. Although initiated, construction of the new Waikolea fire station has not been completed as stated.

Climate

The climate section is too brief. Emphasis ought to be given to the diurnal patterns, particularly to the nighttime loss of the tradewinds giving rise to calm nights, with dewfall on about 70% of the nights. These conditions are conducive to the attraction of mosquitoes. The old PRJ Waipio water records are pertinent to the topic and can be obtained by contacting Tori Cullins at the Environmental Center (956-3976).

Noise

Most of the residential units on the southeast border directly facing the proposed park are two-story units with windows that open onto the park area, and many of them are located less than 20 feet from the fence-line. Currently, there are no trees or other noise-shielding shrubbery along that fence. It seems that there will be significant noise and lighting impacts of the proposed facilities upon these nearby residences. The conceptual master plan shows tree

Mr. John Whalen
May 7, 1997
Page 5

plantings all along this fence, however, careful attention and planning must be given to the type of trees and other plantings placed in these areas in order to minimize impacts. For example, if short, small-canopy trees are planted and/or trees without densely growing canopies (like shower trees), then the noise impacts will be great either forever or during the 5-10 years which it would take for a substantial canopy to develop. The issue here is that noise levels will increase for those residences at times when there currently is little noise, and sincere, considerate efforts should be made to minimize these impacts.

Conclusion

In short, although we support the project, we suggest that it would be substantially improved by incorporation of the comments that our reviewers have provided.

Thank you for the opportunity to comment on this draft EA.

Sincerely,


John T. Harrison
Environmental Coordinator

cc: OEQC
City and County Department of Parks and Recreation
City and County Building Department
Roger Fujioka
Paul Ekern
Roger Babcock
James Hollyer
Tori Cullins



July 14, 1998

John T. Harrison, Environmental Coordinator
University of Hawaii Environmental Center
2550 Campus Road, Crawford 317
Honolulu, Hawaii 96822

Dear Mr. Harrison:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase I to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. Loss of Agricultural Lands

The footnote on page 21 will be corrected.

The project is not expected to have a "benchmark" effect on agricultural land prices in Central Oahu because the site is being acquired by eminent domain for a specific public purpose, not for speculation on future urban uses. The sale price will be determined on the basis of its intended use as a public park through a process which is quite distinct from land transactions between private entities.

2. Water Consumption

The City's Department of Wastewater Management is proceeding with plans to treat effluent from the Mililani plant to the R-1 (tertiary) level to enable the possible use of recycled wastewater for irrigation of the project site. Nevertheless, the Board of Water Supply (BWS) continues to raise concerns about the migration of viral pathogens and minerals from treated effluent into the groundwater. Unless these concerns can be addressed to the satisfaction of the BWS, other long-term sources of irrigation water will be necessary.

The area that you describe along the southern boundary of the park site as an ideal location for "park side" homes has already been developed for residential use (i.e., the Waikole community.) Since there are no other perimeters of the site which are suitable for residential development, I stand by the statement that park development would not induce the construction of new homes and an indirect increase in potable water demand in the area.

The facilities for professional sports are also unlikely to induce secondary demand for water consumption. While specific users of these facilities

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Letter to John T. Harrison
July 14, 1998
Page 2

will not be known until the procurement process is completed, the City is not expecting to attract programs comparable to the intensity and scale of baseball winter camps in Arizona or Florida that involve substantial onsite accommodations for players, staff and visitors and accessory commercial uses.

3. Drainage

The project area will contain much less impervious surface than a residential development such as Mililani, so resultant stormwater runoff will be lower. Also, unlike at Mililani, the drainage system is designed to prevent a net increase in peak stormwater discharge by providing onsite retention and detention basins and swales, allowing the excess to sheetflow in a dispersed, natural pattern rather than concentrating the runoff at flumes and other formal drainage structures.

4. Landscape

Grasscycling, composting and mulching will occur at the onsite nursery and botanical garden, located near the southern boundary of the park. Separate containers for the disposal of aluminum cans and glass bottles will be provided in the park and recyclable materials will be collected at the maintenance building.

5. Construction Phase

The construction contractor will be required to remove litter which collects along the perimeter fencing and within the construction site itself.

6. Transportation Facilities and Traffic

The FEIS will include your suggested corrections and additions to the text and map concerning Waipio Uka Boulevard.

The easement for the Paiwa Street extension was provided because it completes an obvious link in the regional roadway system, connecting two sections of major streets (Ka Uka Boulevard and Paiwa Street) which have already been built and serve as routes to interchanges at the H-2 and H-1 Freeways, respectively. An easement for the additional link to Kunia Road was not provided because this route is far more expensive to build, requiring bridges to span two wide gulches, and is not as necessary a component of the future regional roadway network. It may not be needed at all if urban expansion in Central Oahu is curtailed, as is presently being proposed by the City administration. However, the lack of an easement for the link to Kunia Road does not preclude its being built in the future. The alignment for this connection could be shifted south of the proposed tennis complex if the City decides later that the road is really needed. The map in Exhibit 13 of the DEIS is very conceptual, so the alignments of future roadways should not be taken specifically as depicted.

The grassed area north of the main parking lot fronting Kamehameha Highway is designated for "overflow" parking. This area is large enough to accommodate at least 1,000 vehicles, if needed. Trip generation and infrastructure capacity estimates were derived from a combination of design national design criteria for regional parks and consultation with staff of the Department of Parks and Recreation. For estimates relating to spectator facilities, such as the baseball and tennis stadiums, the University of Hawaii's Special Events Arena was used as a comparison. By using this comparison, our traffic analysis probably overstates the impact of proposed facilities at Central Oahu Regional Park because the seating capacity may be less than what is described in the master plan and the facilities in Central Oahu are not as

Letter to John T. Harrison
July 14, 1998
Page 3

likely to attract as many spectators or as frequent large events as does the Special Events Arena.

7. Public Safety

I regret that we were misinformed about the completion schedule for Waikole Fire Station. This will be corrected in the FEIS.

Dates for the initiation and completion of the police substation at Waikole have not yet been determined. The Honolulu Police Department has been an active participant in the planning of this project. They anticipate the need to add at least one cushman beat or five officers to provide adequate coverage and response for park security.

8. Climate

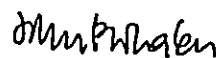
Discussion of climate conditions will be expanded in the FEIS, as you request. I appreciate your offer to provide a copy of the PRI water records.

9. Noise

Your point about the proximity of residences to certain activity areas of the park is well-taken. An environmental noise study was conducted to consider this impact and recommend mitigative measures. The report by the acoustical consulting firm of Darby & Associates, which will be included in the FEIS, identified four potential noise sources: the boxcar stadium, the baseball stadium (during major spectator events), parks maintenance activities, and mechanical equipment for buildings. An excerpt of the report which addresses these concerns is enclosed for your reference.

While not mentioned in this report, the project's landscape architect has designed a planting plan for the southern perimeter of the site, adjacent to the residential areas, which will muffle noise and shield lighting from the park. This is not apparent from the conceptual plan shown in the DEIS because of its small scale.

Sincerely,


John P. Whalen, AICP



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P. O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

May 8, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement (DEIS) - Waiola Regional Park and Sports Complex, Island of Oahu, Ewa Judicial District

We have reviewed the above document and as stated in our response of March 5, 1998, to the Draft Environmental Assessment (DEA) we reiterate that the area is on Prime Agricultural Land and we highly recommend that this area should be kept for agricultural use.

Thank you for the opportunity to review this document.

Sincerely,


KENNETH M. KANESHIRO
State Conservationist

cc:

Mr. Warren Sato, Building Department, City and County of Honolulu, 650 South King Street, 2nd Floor, Honolulu, Hawaii 96813
Mr. Gary Gill, Director, Office of Environmental Quality Control, State of Hawaii, 235 South Beretania Street, Suite 702, Honolulu, Hawaii 96813

The Natural Resources Conservation Service works hand-in-hand with the American people to conserve natural resources on private lands.

AN EQUAL OPPORTUNITY EMPLOYER



July 14, 1998

Kenneth M. Kaneshiro, State Conservationist
U.S. Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Kaneshiro:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waioa Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Your concern about the loss of prime agricultural land is noted. However, the City intends to proceed with the development of this site for a regional park for the reasons explained in the DEIS.

Sincerely,

John P. Whalen
John P. Whalen, AICP



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

April 17, 1998

Civil Works Branch

Mr. John P. Whalen
Plan Pacific
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (DEIS) for the Proposed Waioa Regional Park and Sports Complex, Ewa, Oahu (Tax Map Key 9-4-5: 74). The following comments are provided in accordance with U.S. Army Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, a DA permit may be required for any work performed within Kipapa Gulch. Please contact Ms. Lolly Silva of our Regulatory Section at 438-9258 for further information and refer to file number 980000106.

b. The flood hazard information provided on page 11 of the DEIS is correct.

Sincerely,

Paul Mizue

Paul Mizue, P.E.
Chief, Civil Works Branch

737 Bishop Street
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Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9448



July 14, 1998

Paul Mizue, Chief
Civil Works Branch
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Mizue:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)**

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

We do not anticipate any work within Kipapa Gulch during Phase 1, but your advice concerning the possible need for a DA permit for future phases is noted.

Sincerely,

John P. Whalen, AICP

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Hawaiian Electric Company, Inc. - PO Box 2750 - Honolulu, HI 96840 OK

March 24, 1998

Mr. John P. Whalen, AICP
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Dear Mr. Whalen

Subject: Draft Environmental Impact statement
Waiola Regional Park and sports complex
HECO Service Request No. P233042

Thank you for the opportunity to comment on the subject DEIS. Electrical service to the complex is presently planned to come from our existing facilities on Paiwa Street and will not require any additional transmission lines or substations. Please also note that the overhead pole line shown in exhibits 16 and 17 are communications lines, and are not HECO's.

Please feel free to call me (543-5657) if you have any questions regarding this matter.

Sincerely,

William F. Muench, P. E.
Senior Customer Engineer
Customer Installations Department

cc: Mr. Warren Sato
C&C Building dept.

Mr. Gary Gill
State of Hawaii Office of Environmental Quality Control

WINNER OF THE EDISON AWARD
FOR DISTINGUISHED INDUSTRY LEADERSHIP





July 14, 1998

William F. Meunch, Senior Customer Engineer
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Meunch:

Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiala Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Your comments on the adequacy of the present transmission system to accommodate the project and the observation that the overhead poles along Kamehameha Highway are communications lines will be incorporated in the Final EIS.

Sincerely,

John P. Whalen
John P. Whalen, AICP

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Leeward Oahu Transportation Management Association

May 6, 1998

Mr. John P. Whalen, AICP
PlanPacific, Inc.
737 Bishop Street, Suite 1520
Honolulu, HI 96813

RE: Draft Environmental Impact Statement
Waiola Regional Park and Sports Complex

Dear Mr. Whalen:

In our comments on the EISPN (2/24/98), we expressed concern with the project's planned exclusion of a through-road connecting Paiwa Street and Ka Uka Boulevard. We stated that its inclusion would allow for a thorough and comprehensive assessment of regional access and circulation issues of interest to the community as it contemplates the development of the Waiola Regional Sports Complex.

We have reviewed the DEIS, which includes the Traffic Impact Assessment Report (TIAR) prepared by Pacific Planning & Engineering, Inc., and would like to comment as follows:

1. For a project of this magnitude, the TIAR is much too limited in scope to give the regional and neighboring communities a complete and objective assessment of the project's impact on the transportation system. The restriction of the traffic study to only three (3) intersections in the immediate area (Paiwa/Lumiaina; Waipio Uka/Kamehameha; Ka Uka/Kamehameha) does not give a good picture of regional impacts nor the means to weigh the merits of infrastructure alternatives.

Unanswered in the TIAR are questions such as:

- a. How different would the traffic projections be at each of the three intersections if there were a through-road connecting Paiwa Street with Ka Uka Boulevard? Could a through-road help achieve a better balance of traffic volumes and travel patterns on all roadways leading to the sports complex?
- b. If the Paiwa Street entry is to be limited only to special events, Lumiaina Street will carry the burden of traffic from Waikela and Waipahu to the entry points on Kamehameha Highway. What will this increased load do to the intersection of Lumiaina and Kamehameha Highway, as well as each intersection with Waikela Center entries? How would the unlimited use of the Paiwa to Waipio Uka entry mitigate the load on Lumiaina? Why didn't the study of the Lumiaina/Paiwa intersection include traffic

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Mr. John P. Whalen, AICP

projections for special event traffic? Lumiaina Street already carries more traffic than was intended. What is the actual amount of delays now being experienced on Lumiaina? How much more delays are expected? The actual increases in delays along this roadway should be quantified.

- c. How will the reliance on Kamehameha Highway for park entry affect the level of service (LOS) for the entire length of the highway from the Waiawa Interchange off-ramps to Ka Uka Boulevard? What actual amount of added delays can be expected?
 - d. Could the Paiwa Street extension influence more strategic placement of parking areas and bus service facilities? Could it help expedite the re-structuring of bus routes for shorter and more direct service to the park and between Central Oahu/North Shore communities and Kapolei and, of course, provide better bus access to the park?
2. Traffic Conditions (Appendix C, pp. 15-41): The inconsistent depiction of correct laneage configurations made this entire section very confusing and difficult to understand. Further, because each LOS indicates a range of average delay, the assignment of LOS levels at each of the study intersections does not give a true picture of the impacts of increased traffic caused by the park. Other comments are as follows:
- a) Kamehameha Highway with Ka Uka Boulevard; Ka Uka with Ukee:
 - 1) Figures 7-9 depict existing laneage at the time of the traffic counts, not what actually exists today. However, they do not match with the existing laneage depicted in Figures 16, 19, and 22.
 - 2) In Figures 10-15, why are the projected Year 2005 traffic volumes depicted on obsolete laneage?
 - 3) Two exclusive left-turn lanes already exist on the westbound leg of Ka Uka. If these two lanes are expected to operate at LOS D without the project, why is one lane being recommended with the project? What amount of additional delays will result?
 - 4) Figures 16, 19, and 22 indicate that the recommended new laneage into and out of the park will be operating at LOS D during morning and afternoon peak hours and weekends. What are the actual delays? How much of this traffic/delay could be minimized and/or reduced if there was a through-road?
 - b) Kamehameha Highway with Waipio Uka Street
 - 1) Figures 7-15 and 17 depict the wrong lane configurations. The correct laneage is

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reflected on Figures 20 and 25.

- 2) Why are double left-turn lanes being recommended on the westbound leg of Waipio Uka when they already exist?
 - 3) Figures 17, 20, and 23 indicate that the recommended new laneage into and out of the park will be operating at LOS D during morning and afternoon peak hours and weekends. Again, what are the actual delays? How much of this traffic/delay could be minimized and/or reduced if there was a through-road?
- c) Lumiaina Street with Paiwa Street
- 1) Figures 7-15 depict the wrong lane configurations. The correct laneage is shown in Figures 18, 21, and 24.
 - 2) Figures 18, 21, and 24 indicate that this intersection will be at LOS D with or without the park. The TIAR notes significant traffic volumes entering Waikele Center, and states in Sec. 2.2.1 that additional delays at this intersection will be caused by park traffic. Since LOS D represents a range of delay between 25.1 and 40.0 seconds per vehicle, the amount of existing and anticipated additional delays should be quantified to show the extent of degradation that is expected to occur.
3. Sec. 1.11. Transportation Facilities (p. 18): To our knowledge, the Royal Kunia park-and-ride was completed nearly two years ago.
4. Sec. 2.2.1. Proposed Roadway Improvements (p. 22-23): This section notes increased traffic to and from the park will cause additional delays at the intersections of Ka Uka Boulevard with Ukee and Lumiaina with Paiwa, but that the existing configurations could accommodate the anticipated increase. What actual amount of delays are being anticipated? How much worse will it be? Why doesn't this section mention the proposed additional ingress/egress for special events via the Paiwa Street connection to Waipio Uka by an internal road?
5. Section 2.2.2. Other Traffic Mitigation Measures (p.23): This section makes the first reference to Paiwa Street as one of three entry points to the park. However, aside from stating that it will be gated most of the time, it does not clarify how it will be connected to the park's internal roadway system, as is done on page 7 of the TIAR.
- We concur that the proposed parking and bus loading area on Kamehameha Highway could make an ideal site for joint use as a park-and-ride. However, its value as a park-and-ride will depend on how readily it lends itself to convenient access to different transit routes and services. Based on the conceptual plan (Exhibit 15), it appears that the proposed joint use is premised only on the existing bus service running on Kamehameha Highway.

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Will it be equally convenient to users when the through-road from Paiwa Street to Ka Uka Boulevard is completed and utilized by new bus routes connecting Central Oahu and Kapolei?

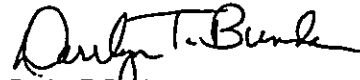
What is the basis for believing that the placement of most of the parking and bus loading spaces along Kamehameha Highway will "assist and improve traffic flow?" What about the convenience to people? Nothing is mentioned about how parking and bus accommodations (public and private) is planned to enable park users and their equipment to easily access their venue.

It is still unclear how an easement for a through-road, rather than the road itself, can be a mitigation measure.

In summary, it is disappointing that the DEIS does not provide enough information to give the community the means to compare the traffic/transportation impacts of the complex with and without the connecting through-road from Paiwa Street to Ka Uka Boulevard.

Thank you for the opportunity to offer these comments.

Very truly yours,



Darryln T. Bunda
Executive Director

cc: Mr. Warren Sato, City and County of Honolulu Building Department
Mr. Gary Gill, State of Hawaii Office of Environmental Quality Control



July 14, 1998

Darryln T. Bunda, Executive Director
Leeward Oahu Transportation Management Association
94-229 Waipahu Depot Road, #407
Waipahu, Hawaii 96797

Dear Ms. Bunda:

Draft Environmental Impact Statement (EIS) for Central Oahu Regional Park (formerly Waiola Regional Park and Sports Complex)

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

- 1(a) The traffic projections would be different if a through-road were present. However, the traffic volume projections on such a through-road would consist not only of park users, but also a large number of non-park users who would use it as a "shortcut" to Kamehameha Highway. Without the through-road, only park users would be entering/exiting the project site via Ka Uka Boulevard, Waipio Uka Street and Paiwa Street.
- 1(b) The Paiwa Street entry will be open during normal park hours. It is the internal circulation road that will be gated to prevent it from being used as a *de facto* through-road. The narrative in the Draft EIS was misleading on this point; it will be corrected in the Final EIS.
- 1(c) The traffic consultant, Pacific Planning & Engineering (PP&E) will study the additional following intersections and include the analysis in the Amended Traffic Impact Assessment Report (TIAR):
 - Kamehameha Highway with Lumiaina Street
 - Kamehameha Highway with Lumiauu Street
 - Kamehameha Highway with Waipahu StreetDelay data will be included in the revised TIAR.
- 1(d) The traffic analysis in the TIAR shows that the anticipated peak hour traffic volumes generated by the proposed project do not create the need for a connector road. This is despite a very conservative assumption that all trips to the park would be by private passenger vehicle. In reality, it should be expected that at least a portion of park users would

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arrive and depart by municipal or private chartered bus or by bicycle or foot. When the proposed Paiwa Street extension is designed and built, it could be done in such a way as to improve bus service, as well as pedestrian and bicycle access to the park. The conceptual master plan for the park is flexible enough to accommodate this. A 120-foot wide easement for the future road is provided so that it can be designed as a landscaped "parkway", with ample room for separated bikeways and walkways and pull-outs for bus stops. The only portion of the park presently in construction design is Phase I at the southeastern sector of the site, which does not include the vicinity of the future through-road.

- 2(a)(1) Figures 7 to 9 were not intended to show lane configurations, only the traffic volume turning movements.
- 2(a)(2) Figures 10 to 15 were not intended to show lane configurations, only the traffic volume turning movements.
- 2(a)(3) The traffic analysis shows that two exclusive left-turn lanes are not required because of the relatively small number of vehicles making this movement. The influencing factor in the LOS D determination is that most of the green time is given to Kamehameha Highway movements. Delay data will be included in the revised TIAR.
- 2(a)(4) Delay data will be included in the revised TIAR. The effect of a through-road on traffic delays was not analyzed as part of this project because the traffic analysis found that the through-road was not needed to mitigate impacts due to the project. The future through-road has a different purpose in the regional highway network and its traffic effects will be analyzed as a separate project.
- 2(b)(1) Figures 7 to 15 were intended to show traffic volumes only and not lanes.
- 2(b)(2) The recommendations on Page 43 of the TIAR describe the necessary lanes to accommodate the forecasted traffic volumes, not to describe new lane requirements.
- 2(b)(3) Delay data will be included in the revised TIAR. The effect of a through-road on traffic delays was not analyzed as part of this project because the traffic analysis found that the through-road was not needed to mitigate impacts due to the project. The future through-road has a different purpose in the regional highway network and its traffic effects will be analyzed as a separate project.
- 2(c)(1) Figures 7 to 15 were not intended to show lane configurations, only the traffic volume turning movements.
- 2(c)(2) Delay data will be included in the revised TIAR.
- 3. The reference to the Royal Kunia park-and-ride lot will be corrected in the FEIS.
- 4. Delay data will be included in the revised TIAR.
- 5. The Paiwa Street access will be open during normal park hours. However, the internal road will be gated, as shown in Exhibit 15 of the Draft EIS, to prevent it from being used as a *de facto* through-road.
- 6. The final conceptual master plan, completed about three weeks after the publication of the DEIS, shows a somewhat more dispersed pattern for parking within the park. However, approximately 1,250 (or nearly half) of the spaces are located in the main parking lot along Kamehameha Highway, not only for its proximity to a major arterial and the only current bus

route in the vicinity, but also because the park facilities which are expected to generate the greatest parking demand -- namely, the baseball stadium and other playfields are situated nearby. In this respect, the arrangement of parking spaces is designed for the convenience of park users because principal facilities and activity areas are within convenient walking distance of the bus loading areas and main parking lots and conflicts between vehicles and pedestrians and bicyclists within the park are minimized.

Sincerely,

John P. Whalen
John P. Whalen, AICP



THE OUTDOOR CIRCLE

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May 1, 1998

Mr. John P. Whalen
PlanPacific, Inc.
737 Bishop Street, Ste. 1520
Honolulu, HI 96813

RE: Draft Environmental Impact Statement: Waiola Regional Park and Sports Complex

Dear Mr. Whalen:

Thank you for the opportunity to comment on the above referenced Draft Environmental Impact Statement. We have reviewed the document and offer following comments:

1. We refute your assumption that "it is highly unlikely that rare and endangered species of flora would remain or proliferate after agricultural use of the site," and therefore a flora survey is not needed. There are known examples on the Ewa Plain where agricultural lands, now being redeveloped, contain endangered plants. We are dismayed that no flora survey of the site is contained in this Draft EIS and would like one done as part of the final environmental impact statement.
2. Responding to the EIS Prep Notice, we asked if the existing 46,000 volt transmission line as well as any new distribution lines that run through the site, would be placed underground. The response says that the City and County plan to underground utility lines as part of the proposed development, but, the DEIS says this is only a possibility. Does the \$26.3 million estimated in utility costs include the underground lines? As long-time proponents of underground utilities, we will advocate for this to happen.
3. The DEIS states that a pre-construction soil study will be conducted to assess the nature and the quantity of potentially hazardous materials. Since this study is being done during the construction phase of the project, and not as part of the environmental impact statement, we feel it is important that the public be notified about the results. How will this be done?

Waiola Regional Park and Sports Complex
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Page 2

4. Discussion regarding public sector jobs created by this park for maintenance of facilities, administration and operation of the public recreation programs does not deal with how these jobs will be funded. It does not make sense to build this park if there are not sufficient funds to keep it maintained.
5. The DEIS tells us there will be a botanical garden as part of the complex, but the Master Plan shows two botanical gardens and a nursery. How many gardens will be on site and who will maintain them?
6. Will the City charge a fee for the use of the community center, or will it be free for neighborhood functions?

A complex the size of the proposed Waiola Regional Park and Sports Complex requires a great deal of financial resources. Before proceeding on such a fast track, we would like to know that a sound funding plan has been developed. In addition, it is important to understand who will be using these vast park resources. The Outdoor Circle advocates for open park space and believes in concept of the Waiola Regional Park. However, we question if in these lean fiscal times this is the best use of our county's resources. Might not the money be better spent improving the landscaping and maintenance of our existing parks?

Thank you for the opportunity to comment.

Sincerely,


Mary Steiner
CEO

cc: Building Department, Warren Sato
Office of Environmental Quality Control, Gary Gill



July 14, 1998

Mary Steiner, CEO
The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

Dear Ms. Steiner:

**Draft Environmental Impact Statement for Central Oahu Regional Park
(formerly Waiola Regional Park and Sports Complex)**

Thank you for your review and comments on the above. Please note that the project name was changed by the City Council in its recent approval of the construction budget for Phase 1 to emphasize the primary purpose of the park.

Our responses follow the order in which to your comments appeared in your letter:

1. Colonies of endangered plants were found in portions of the Ewa Plain which were not very intensively cultivated for sugar cane, leaving undisturbed pockets of land. The project site in Central Oahu, by contrast, has been intensively cultivated for many years. There are virtually no undisturbed areas where even native flora, let alone rare and endangered species, could have survived. No rare or endangered flora were encountered when a housing project proposed for this site underwent EIS and State Land Use boundary amendment reviews in the late 1980's nor when the Department of Land and Natural Resources conducted a feasibility and conceptual planning study for a regional park similar to the current proposal in the early 1990's. State and federal wildlife agencies, which were consulted in the preparation of the DEIS and have reviewed the document, are apparently satisfied with the results of the earlier studies and have not requested any further documentation on this issue.
2. There was no change in the City's commitment to place the 46kv transmission line and any onsite distribution lines underground as part of the park development. However, the overhead communications lines shown in the visual simulations in Exhibits 16 and 17 of the DEIS are within the State right-of-way, not the park site, and it was uncertain at the time the DEIS was published whether the City would fund the undergrounding of these lines, as well. I am happy to report that our visual simulation helped convince the City to include the undergrounding of this line in the project budget, even though funding for other components of the park project had to be cut back. A portion of the undergrounding will occur in Phase 1, for which construction funds have recently been approved. The remaining portion of the line will be placed underground during Phase 2.

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Letter to Mary Steiner
July 14, 1998
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3. A "phase 1" environmental report on hazardous waste materials has been completed and will be included in the FEIS.
4. Budget decisions are made by elected public officials and involve considerations that go beyond the scope of discussion in an EIS. It is difficult to predict what the actual phasing schedule for the park will be as priorities are worked out through the budget process -- and they are almost certain to change. Even during the review period for the DEIS itself the Mayor announced that the facilities designed for professional sports training and exhibitions, such as the baseball and tennis stadiums, would be built only if there is private sector participation in the cost of their construction and maintenance. Shortly after, the City Council excluded the baseball stadium from its approval of funding for Phase 1 construction. Temporal exigencies or priorities will influence the build-out schedule, but this does not negate the long-term goal to provide a regional park at this location. To fulfill that goal, it is prudent for the City to acquire the site and develop it incrementally according to a master plan.
Operations costs were considered by the City Council before approving the Phase 1 construction funding. The Department of Parks and Recreation (DPR) provided estimates for the annual costs for personnel, equipment and supplies to maintain and operate the park at full development, exclusive of the professional sports facilities to be built and maintained with private sector funding. DPR's breakdown of these costs will be included in the FEIS.
5. The botanical garden has been omitted from the final conceptual master plan, which was completed about three weeks after the DEIS was published. This deletion was made in large part to achieve cost savings so that the overhead communications lines along Kamehameha Highway could be undergrounded. The nursery, which will be managed by DPR staff, remains in the master plan because it is an essential component of park maintenance. The DEIS was published about three weeks before the master plan was completed.
6. It's premature to define what fees, if any, will be charged for the use of the proposed community center. The most that can be said at this point is that user or rental fees will most likely be consistent with City policy for similar park facilities, such as McCoy Pavilion.

Sincerely,

John P. Whalen, AICP