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OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

February 10, 2011

TO: Mr. Gary L. Hooser, Director
Office of Environmental Quality Control
Department of Health

FROM: Duane Y. Kashiwai, Public Works Administrator
Facilities Development Branch

SUBJECT: Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan, Honolulu, Oahu

The Department of Education, Facilities Development Branch, has reviewed the Draft Environmental Assessment for the subject project and anticipates a Finding of No Significant Impact. Please publish notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and one (1) copy of the document in PDF format on a CD and one (1) hardcopy of the Draft Environmental Assessment. If you have any questions, please contact Janna Mihara of the Facilities Development Branch at 377-8314.

DYK:JM:jmb

Enclosure

MCKINLEY HIGH SCHOOL
ATHLETIC COMPLEX MASTER PLAN

Honolulu, Island of O'ahu
TMK (1) 2-3-009:001 (por.)

DRAFT ENVIRONMENTAL ASSESSMENT

GROUP 70 INTERNATIONAL

February 2011

McKinley High School
Athletic Complex Master Plan

TMK: (1) 2-3-009:001 (por.)
Honolulu, Island of O'ahu

Draft Environmental Assessment (DEA)

This environmental document is prepared in accordance with the requirements of Chapter 343, HRS and Hawai'i Administrative Rules, Title 11, Department of Health

Applicant:
State of Hawai'i Department of Education
Planning Section, Facilities Development Branch
c/o Kalani High School
4680 Kalanianaole Hwy.
Honolulu, Hawaii 96821

_____ _____

Applicant
State of Hawai'i Department of Education,
Facilities Development Branch

Date

Approving Agency:
State of Hawai'i Department of Education

Prepared By:
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February 2011

1.0
DESCRIPTION OF THE PROPOSED ACTION

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1.0
DESCRIPTION OF THE PROPOSED ACTION

1.0 DESCRIPTION OF THE PROPOSED ACTION

This Draft Environmental Assessment (DEA) has been prepared in accordance with the requirements of Chapter 343, Hawai'i Revised Statutes and Title 11, Chapter 200, Hawai'i Administrative Rules, Department of Health, State of Hawai'i. The proposed action involves the use of State funds and lands toward the development of the McKinley High School athletic complex by the State of Hawai'i Department of Education (DOE).

1.1 PROJECT INFORMATION SUMMARY

Type of Document:	Draft Environmental Assessment (DEA)
Project Name:	McKinley High School (MHS) Athletic Complex Master Plan
Proposing Agency and: **Accepting Authority:**	State of Hawai'i Department of Education (DOE) Planning Section, Facilities Development Branch c/o Kalani High School 4680 Kalanianaole Hwy. Honolulu, Hawaii 96821
CH. 343, HRS Trigger:	Use of State land and funds
Project Location:	McKinley High School 1039 S. King Street Honolulu, Hawai'i 96814
Tax Map Key:	(1) 2-3-009:001 (portion)
Landowner:	State of Hawai'i
Land Area:	Master Plan area - 22.1 acres (approximate)
State Land Use Designation:	Urban
Development Plan:	Primary Urban Center
Development Plan Land Use Map:	Institutional
Zoning:	Public (per Kaka'ako Community Development District Mauka Area Plan)
Flood Zone:	Zone X (outside 500-year flood) and Zone A (areas subject to inundation by the 1-percent-annual-chance flood, no base flood elevations determined)
Anticipated Determination:	Finding of No Significant Impact (FONSI)

1.2 OVERVIEW OF PROPOSED PROJECT

The State of Hawai'i Department of Education is proposing an Athletic Complex Master Plan (ACMP) (see *Figure 1.4*) to improve the athletic and wellness facility at McKinley High School. Master plan elements include:

- Relocation and replacement of the track/football field and bleachers (approximately 2,500 seats);
- Relocation and replacement of three existing tennis courts and addition of three new tennis courts;
- Replacement Boys P.E. locker/shower facility and Boys athletic locker/shower facility;
- Relocation and replacement of the existing outdoor rifle range with a new semi-enclosed facility;
- A new 100-stall parking lot;
- A new 2-story YMCA wellness center with a 50-meter swimming pool, bleachers, and a 3-story parking structure (340 stalls);
- A new gymnasium building;
- Renovation of the existing gymnasium;
- Relocation and replacement of the baseball field, bleachers (500-1,000 seats), and batting cages;
- An access road extension;
- An outdoor plaza and a pedestrian boulevard; and
- An open plaza at the replacement track/football field.

The facilities will be located in the area of existing athletic facilities and open spaces along the Ewa and makai sides of the school campus. Phase 1 of the master plan includes relocation and replacement of the softball field (upgraded to a softball stadium), construction of a new Girls Athletic Locker Room, and a new access road. A Final Environmental Assessment (June 2010) was prepared for these Phase 1 facilities by Gerald Park Urban Planner. These Phase 1 facilities are currently under construction and will be considered as existing conditions for the purpose of this Environmental Assessment.

1.3 PURPOSE OF THE PROJECT

The improved MHS athletic complex will provide MHS students and community residents access to quality athletic and wellness facilities. MHS athletic teams have participated as a member of the O'ahu Interscholastic Association (OIA) for many decades despite not having adequate facilities. Upon completion, the improved athletic complex will provide quality facilities for the school's physical education program, athletic team practices and games, and general wellness and recreation. By seeking a public-private partnership with the YMCA, MHS can offer a greater range of athletic and wellness facilities to students and the larger community.

1.4 PROJECT LOCATION AND SITE CHARACTERISTICS

McKinley High School is located in the heart of Honolulu within walking distance of State and County offices, The Queen's Medical Center, Neal S. Blaisdell Center, Ala Moana Center, Ward Centers, Thomas Square and the Honolulu Academy of Arts. The school is bordered by S. King Street to the north, Pensacola Street to the east, Kapiʻolani Blvd. to the south, and the Neal S. Blaisdell Center's parking structure to the west.

The location of the school and proposed master plan area is presented in *Figure 1.1*. The 22.1-acre master plan area is located within a portion of Tax Map Key Number 2-3-009:001 (por.) (*Figure 1.2*). The area on the site where the athletic complex will be constructed is currently used for athletic activities, staging for a City and County of Honolulu contractor, and as yard space for a landscape nursery. The neighborhoods surrounding the campus consist primarily of low- and high-rise residential and low- and mid-rise commercial uses (*Figure 1.3*). Residential and commercial development in the area is expected to continue with the implementation of master plans by the Hawaiʻi Community Development Authority (HCDA) and large landowners (Kamehameha Schools and General Growth Properties).

1.5 PHYSICAL CHARACTERISTICS OF THE PROJECT

The improvement of MHS's athletic complex has long been envisioned as a means of providing quality facilities consistent with the school's proud tradition and notable leadership in Hawaiʻi's history.

Overview

The development of the Athletic Complex Master Plan (ACMP) has occurred over several years. Prior to the drafting of the physical plan for the facilities, the State Department of Education held a Visioning Charrette (November 9, 2007) to establish the major themes for the master plan. Representatives from MHS, DOE, HCDA, YMCA of Honolulu, and the Kakaʻako Improvement Association, as well as a City Council member attended the 3-hour session.

The following four major themes were established during the process:

1. MHS as a focal point/center of the community;
2. Public/private partnership;
3. Extend range of programs with focus on health and fitness; and
4. Fostering McKinley pride/traditions and promote the legacy of leadership.

With the direction provided by these four major themes, the Athletic Complex Master Plan was developed and refined. Subsequent meetings were held with school representatives, alumni, legislature representatives, and community groups. Components of the ACMP are presented in the pages that follow.

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Figure 1.1: Project Location

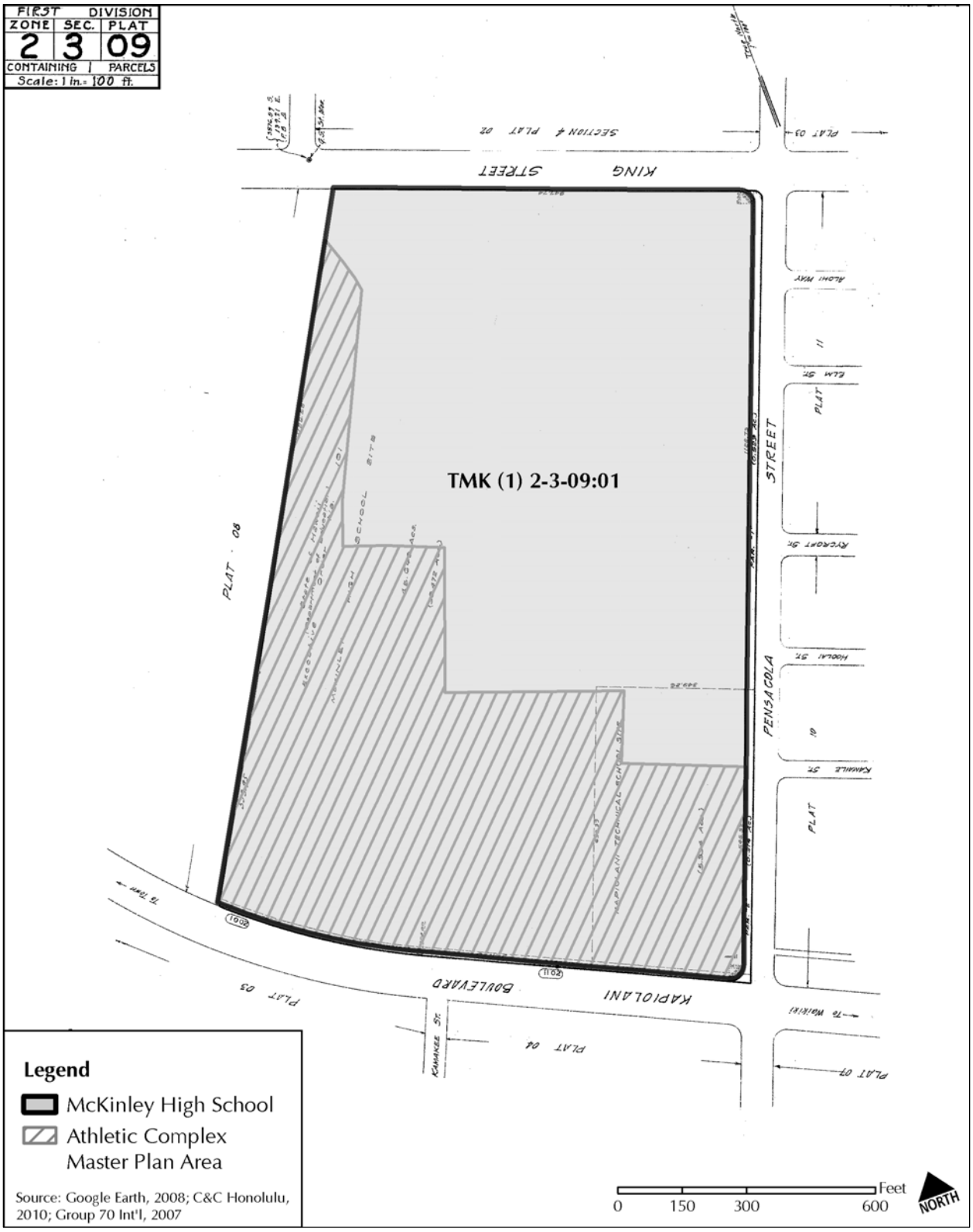

Figure 1.2: Tax Map Key

Figure 1.3: Neighborhood Connectivity (rendering is conceptual and subject to change)

The Athletic Complex Master Plan is presented in *Figure 1.4* and *Figure 1.5*. As seen in these plans and in the figure above, the ACMP further integrates the school and community, connecting Kamakeʻe Street to the MHS campus and to S. King Street with a new pedestrian boulevard and a plaza. MHS students already utilize this route, crossing the football field at the end of each school day to Kapiʻolani Boulevard. Where students wait at the bus stop or continue along Kamakeʻe Street to the Ward complex of shops and eateries. General Growth Properties (GGP) Kakaʻako plans feature this mauka-makai connection and provide for the widening and landscaping of Kamakeʻe Street.

Ewa of the pedestrian boulevard will be the YMCA wellness center, swimming pool, and parking structure. Mauka of the YMCA site are the softball stadium (under construction) and planned baseball field. An extension will connect the softball field access road (currently under construction from Kapiʻolani Blvd.) to the existing campus roadway which exits to S. King Street. Along the existing campus roadway will be a new semi-enclosed rifle range and a new 100-stall parking lot.

Diamond Head of the pedestrian boulevard will be the tennis courts, replacement track/field and Boys P.E. and athletic locker facilities. A new gymnasium is proposed for construction next to the existing gymnasium. An open plaza will be created just Diamond Head of the new gymnasium and will serve as a pre-function gathering space for both the gym and the football field.

The layout of the master plan optimizes school use of athletic and wellness facilities while also supporting community access and use. The track/field, tennis courts, gymnasiums, and the YMCA will be available for public use. As such, they are appropriately located along Kapiʻolani Blvd., providing convenient access while allowing for security and controlled access to the campus.

Master Plan Components

The space program of the proposed facilities within the Athletic Complex Master Plan is summarized in *Table 1.1* and discussed below.

Track/Field, Boys P.E. and Athletic Locker Facilities, and Tennis Complex
A replacement track and field facility will be located at the corner of Pensacola Street and Kapiʻolani Boulevard. The track/field facility will be designed in a broken back configuration, providing for soccer and football use. Synthetic grass will be used on the field and rubber surface will be used on the track. An open plaza, mauka of the track/field facility, will provide a central entry and pre-function gathering space for students and guests arriving from the main campus and from the adjacent parking lot. The replacement Boys P.E. locker facility and Boys athletic locker facility will be located between the open plaza and the field. Bleachers (approximately 2,500 seats) will be gathered from other locations on campus and consolidated at the new field for student body assemblies and as spectator seating for athletic games and practices. The field will have security lighting to allow for early evening use as well. No stadium lights will be installed. MHS currently allows public access to the field and track during school hours provided that the public does not interfere with educational uses. This practice will continue for the new facilities.

Six tennis courts are planned between the track/field and the pedestrian boulevard and are expected to be utilized by the public on a daily basis. The tennis courts will be lighted to allow for evening use.

Baseball Complex
A replacement baseball field, sized according to the national high school standards, is proposed for the athletic complex. The baseball complex will also include 500-1,000 seat bleachers. The field will feature a grassed infield and dirt base path, similar to the existing baseball field. No stadium lights will be installed. These fields will be used for practice from Monday to Friday and for games on Saturdays. Less frequent field use will occur during the summer.

Gymnasium Complex
The gymnasium complex improvements will include construction of a new gymnasium and the renovation of MHS's existing gymnasium. The proposed new gymnasium will be designed to achieve the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for New Construction Silver rating. The new gymnasium will become the school's competition venue with its location adjacent to the existing parking lot providing convenient access to visiting teams and spectators.

The existing gymnasium will undergo a renovation to serve as a practice facility with a portion of the athletic spaces and bleacher spaces converted to meeting rooms and classrooms.

YMCA

The YMCA of Honolulu plans to design, build and maintain a 2-story, 46,000 SF facility and a 50-meter swimming pool on MHS property. This facility includes a 10,000 SF wellness center containing weight training/aerobic exercise equipment, as well as three 2,500 SF exercise studios, a classroom, child care space, and administration areas. Exercise facilities, along with the pool, will be available for MHS use. YMCA members will have exclusive use of locker/shower rooms, child watch room, meeting rooms, and administrative offices. The YMCA hours of operations are expected to be Monday thru Friday 5:00 AM-10:00 PM, Saturday 5:00 AM-6:00 PM, and Sunday 7:00 AM-5:00 PM.

The YMCA projects a membership of 4,000 at this location. Parking for YMCA members will be provided in a 3-story parking structure (340 stalls) adjacent to the YMCA facility.

Along the pedestrian boulevard fronting the YMCA swimming pool will be an outdoor seating area. The area will be shaded by trees or a trellis and be lit for safety purposes. This space will provide a resting place for tennis players, fellowship area for swimmers, and natural gathering place for those using the school's athletic facilities and the YMCA. If combined in the future with a snack bar, food cart or warming kitchen, it has the potential to become a broader amenity for the school and the community.

Area	New/*Renovated* Building S.F.	Number of Existing Outdoor Facilities	Number of Proposed Outdoor Facilities
Existing Gymnasium (Renovated)	*22,500*	--	--
New Gymnasium	23,300	--	--
Boys P.E. Locker Facility	5,300	--	--
Boys Athletic Locker Facility	6,100	--	--
YMCA Wellness Center	46,000	--	--
Tennis Courts	--	3	6
Rifle Range	--	1	1
Track/Field	--	1	1
Baseball Field	--	1	1
Swimming Pool	--	0	1

Table 1.1: MHS Athletic Complex Master Plan Space Program[1]

[1] excluding the replacement softball stadium and the new girl's locker/shower facility as they are currently under construction; numbers rounded to nearest 100 SF.

Circulation and Off-Street Parking

The master plan proposes continued use of campus driveways including a 20-foot wide, right-turn out only, paved driveway is currently being constructed to link Kapiʻolani Blvd. with the softball stadium. This driveway will be modified to include a right-turn in only access with a queuing lane. The right-turn in only driveway will serve as an access to the YMCA parking structure (340 stalls) and extend to the new 100-stall parking lot to be developed near the new rifle range facility (*Figure 1.4*).

A new 4-bus drop-off lane will be provided along Pensacola Street near the track/field facility. This lane will provide special event bus pick-up/drop-off for MHS students going off campus and will support team travel for practice and games.

Interscholastic athletic events are held after school hours to avoid conflict with school activities and facility use. MHS establishes their event schedules so that athletic events are not held concurrently and has successfully coordinated these events for many years without major parking incidents. MHS has provided parking for approximately 1,400 cars for large events on campus and off-campus. The school regularly provides additional parking for events at Neal S. Blaisdell Center. Parking supply is further discussed in *Section 2.13.*

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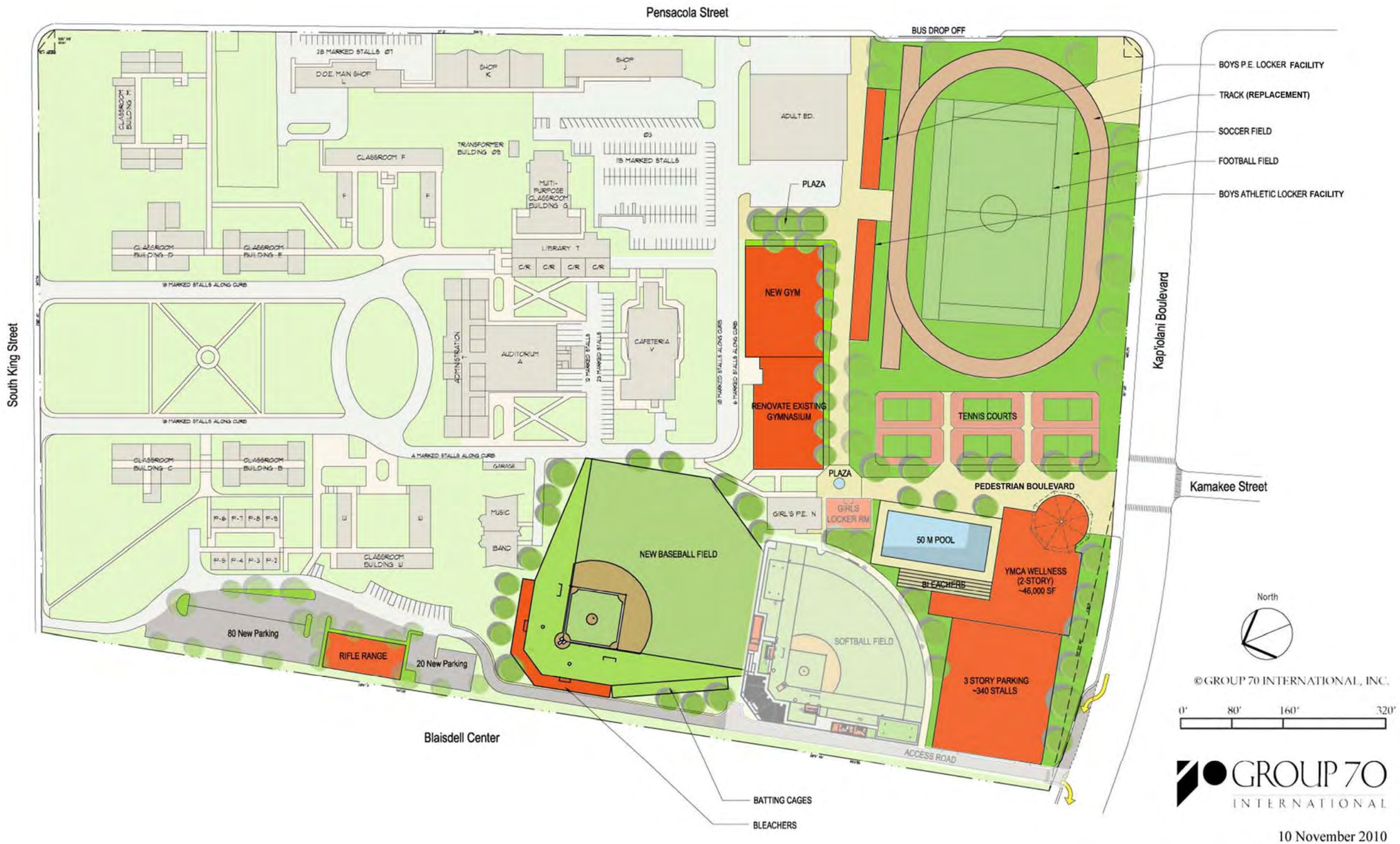

Figure 1.4: MHS Athletic Complex Conceptual Master Plan (subject to change)

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Figure 1.5: MHS Athletic Complex Master Plan Conceptual Rendering (subject to change)

1.6 EXISTING AND ANTICIPATED USE

MHS athletic facilities support physical education and athletics programs and are available for use by community groups and individuals in accordance with DOE policy. *Tables 1.2* and *1.3* summarize the existing sport events schedule and typical number of attendees at MHS athletic events during the regular season and playoffs. These events typically attract between 50-500 attendees depending on the sport. The exception is an annual judo competition which can attract up to 1,500 attendees (one Saturday judo event per year). MHS currently hosts OIA playoff games for girls volleyball, boys volleyball, girls basketball, and boys basketball (*Table 1.3*). These playoff games can attract between 500-3,000 attendees. This schedule is expected to remain stable with the improved athletic facilities.

REGULAR SEASON				
Sport	**Season**	**Number of Home Games/ Season**	**Number of Attendees/ Game**	**Time of the Day that the Event Occurs**
Softball	Feb-May	5	30-40	Weekday 3-6 pm/Sat 10-1 pm
Baseball	Mar-Apr	4	30-40	Weekday 3-6 pm/Sat 10-1 pm
Soccer, Boys	Dec-Jan	5	50-100	Weekday 4-6 pm/Sat 2-4 pm
Soccer, Girls	Dec-Jan	5	50-100	Weekday 4-6 pm/Sat 2-4 pm
Tennis	Feb-Apr	4	25-50	Weekday 1-5 pm/Sat 9-3 pm
Volleyball, Boys	Mar-Apr	2	100-200	Weekday 5-9 pm/Sat 10-1 pm
Volleyball, Girls	Aug-Oct	6	200-500	Weekday 5-9 pm/Sat 10-1 pm
Judo	Mar-Apr	1	1,000-1,500	Sat 8-6 pm
Cross Country	Aug-Oct	1	100-200	Sat 9-2 pm
Air Riflery	Sept-Oct	3	0-10	Sat 9-2 pm
Basketball-Boys	Dec-Feb	7	100-400	Weekday 5-9 pm/Sat 10-1 pm
Basketball-Girls	Nov-Jan	7	300-500	Weekday 5-9 pm/Sat 10-1 pm
Soft Tennis	Sep-Oct	1	20-30	Sat 9-1 pm

Table 1.2: Existing Sport Events Schedule and Number of Attendees at Existing MHS Athletic Facilities During Regular Season

PLAYOFFS				
Sport	**Season**	**Number of Games/ Playoff**	**Number of Attendees/ Game**	**Time of the Day that the Event Occur**
Volleyball, Boys	May	6-12	600-3,000	Weekday 5-9 pm/Sat 3-10 pm
Volleyball, Girls	Nov	6-12	700-3,000	Weekday 5-9 pm/Sat 3-10 pm
Basketball-Girls	Jan	4-12	500-3,000	Weekday 3-10 pm/Sat 3-10 pm
Basketball-Boys	Feb	4-12	500-3,000	Weekday 3-10 pm/Sat 3-10 pm

Table 1.3: Existing Sport Events Schedule and Number of Attendees at Existing MHS Athletic Facilities During Playoffs

Upon completion of the new softball complex, MHS will also host OIA softball playoff games, which have a projected number of attendees between 50-500 persons per game *(Table 1.4).*

PLAYOFFS				
Sport	**Season**	**Number of Games/ Playoff**	**Number of Attendees/ Game**	**Time of the Day that the Event Occur**
Softball	May	12-16	50-500	Weekday 3-9 pm/Sat 3-9 pm

Table 1.4: Projected Additional Sport Event Schedule and Number of Attendees Upon Completion of the MHS Athletic Complex Master Plan

1.7 DEVELOPMENT SCHEDULE AND SUMMARY OF PROJECT COSTS

A summary of projected costs and a 25-year development schedule is provided in this section. In addition to State funds, the YMCA of Honolulu has been identified as a partner in the realization of this master plan. Formal agreement between the YMCA and DOE is pending. DOE will continue to pursue partnerships as it implements this master plan.

Table 1.5 presents the preliminary budget estimate and development schedule of the proposed facilities within the Athletic Complex Master Plan. *Figure 1.6* presents the preliminary development phasing of the athletic complex.

Phase	Year (Est.)	Facility	Estimate Budget (Design & Construction)
1	*2010*	*Softball Stadium* *Girl's Locker Room Expansion*	*$4 mil* *$2 mil*
2	2013	Track & Football Field and 6 Tennis Courts Boys P.E./Athletic Locker & Shower Facilities Replacement Rifle Range New 100-Stall Parking Lot	$39 mil
3	2015	YMCA Wellness Center (2-story), 50-Meter Swimming Pool with Bleachers, and Parking Structure (3-story) Access Road Extension Pedestrian Blvd. /Plaza	$44 mil
4	2017	New Gymnasium New Open Plaza	$17 mil
5	2020	Renovate Existing Gymnasium	$7 mil
6	2025	Relocate Baseball Field	$8 mil

Table 1.5: MHS Athletic Complex Master Plan Preliminary Budget Estimate and Development Schedule

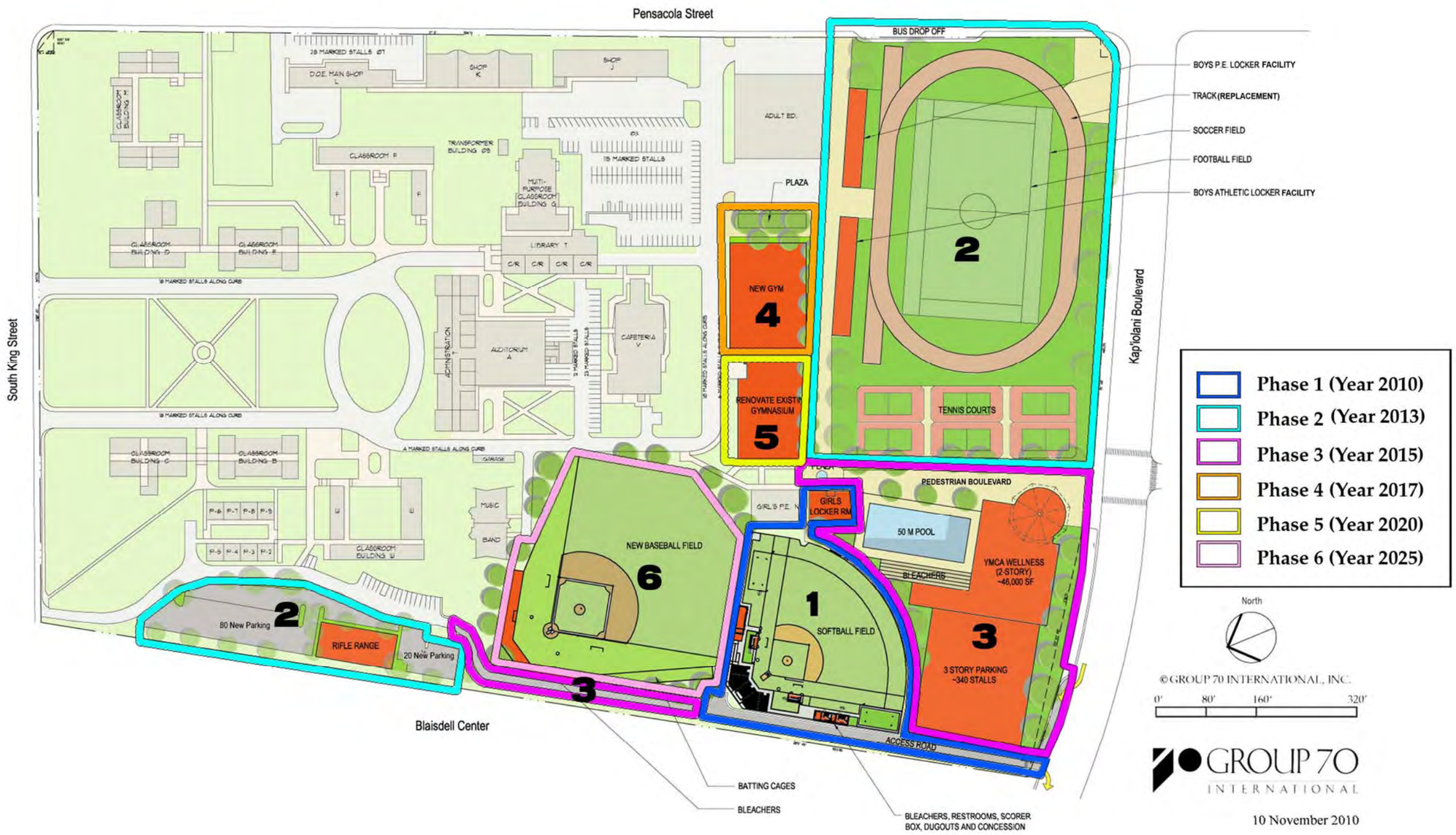

Figure 1.6: MHS Athletic Complex Preliminary Development Phasing Plan

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2.0
DESCRIPTION OF THE AFFECTED ENVIRONMENT

2.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

2.1 LOCATION OF PROPOSED USES AND STRUCTURES

New and replacement facilities are proposed for the following locations within the existing athletic complex.

Track/Field, Boys P.E. and Athletic Locker Facilities, and Tennis Complex

The proposed site for the replacement track/field and Boys P.E. and athletic locker facilities are currently being used for playcourts, tennis courts, the rifle range, a construction base yard, and as vacant open space. The proposed site for the tennis complex is on the Diamond Head portion of the existing track/field.

Baseball Complex

The replacement baseball field will be located at the existing baseball field site but will have a different orientation.

Gymnasium Complex

The new gymnasium will be constructed on the site of the existing Boys P.E. locker facility and the maintenance cottage, Diamond Head of the existing gymnasium.

YMCA

The YMCA facility will be constructed on the site of the existing track/field facility.

2.2 CLIMATE

The project is located in the Honolulu area which has a climate typical of the leeward coastal lowlands of O‘ahu - persistent trade winds, constant temperatures, moderate humidity, and infrequent severe storms. The average annual wind velocity is approximately 10 miles per hour. The mean temperature measured at Honolulu International Airport ranges from 70°F in the winter to 84°F in the summer. Relative humidity ranges between 56 and 72 percent. Average annual precipitation is approximately 24 inches, with rainfall occurring mostly between November and April (Park, 2010).

2.3 TOPOGRAPHY

The MHS campus is generally oriented along a north-south axis. The project site slopes from north to south, from an elevation of 10 feet above mean sea level (MSL) along S. King Street down to approximately 2.5 feet above MSL along Kapi‘olani Blvd. with an average slope of 0.5%.

2.4 GEOLOGY

The Kaka'ako geologic substratum consists of emerged fossil reef and sedimentary deposits that were formed 120,000 years ago (Park, 2010). Much of the Kaka'ako Mauka area was reclaimed from soils composed of soft mixtures of sand, silt, and clay which extend from the top of the sub-surface coral layer to about sea level (Park, 2010). As shown in *Figure 2.1*, the filled area generally cuts across the makai portion of the MHS campus.

2.5 SOILS

The Soil Conservation Service (1972) indicates two soil types within MHS campus (*Figure 2.1*). Fill Land, mixed (FL) underlies about 25 percent of the campus and Makiki Clay Loam (MkA) about 75 percent. The proposed YMCA, tennis complex, track/field, Boys P.E. and athletic locker facilities, the new gymnasium, and the softball stadium (currently under construction) are on Fill Land. The rest of the athletic complex facilities are on Makiki Clay Loam. Makiki Clay Loam has dark-brown surface layer clay loam about 20 inches thick and dark-brown subsoil clay loam about 10 inches thick containing cinders and rock fragments. Permeability of Makiki Clay Loam soil series is moderately rapid, runoff is slow, and the erosion hazard more than slight.

According to the preliminary engineering report prepared by Austin, Tsutsumi & Associates, Inc. (*Appendix D*), the proposed project will require excavation and fill for the construction of the athletic fields, building structures, driveways, parking lots, and pedestrian plazas. The excavation for the proposed project is estimated to be 52,500 cubic yards. The imported fill is estimated to be 41,500 cubic yards.

2.6 WATER RESOURCES

Surface Water

There are no streams, lakes, ponds, open bodies of water, or wetlands on the premises.

Ground Water

The MHS campus overlies the Nu'uanu aquifer. The aquifer is characterized by an unconfined sedimentary basal aquifer above a confined flank basal aquifer. The upper aquifer is classified as currently used, contains moderately brackish water that is not used for drinking and is ecologically insignificant. The flank aquifer is currently used for drinking, contains fresh water, is irreplaceable, and has a low vulnerability to contamination (Mink and Lua, 1990).

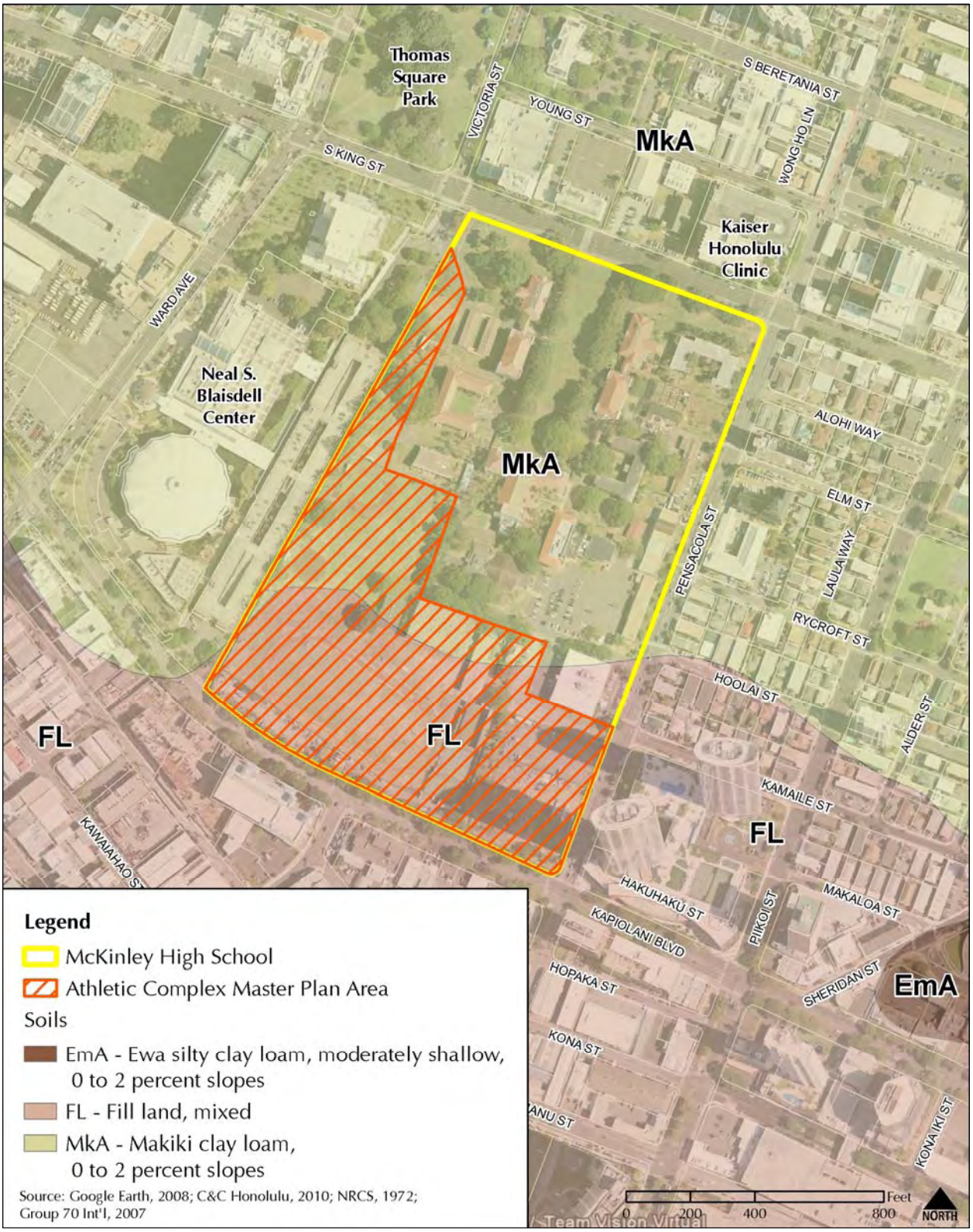


Figure 2.1: Natural Resources Conservation Service Soil Survey Map

2.7 FLOOD HAZARD

Figure 2.2 indicates Federal Emergency Management Agency (FEMA)-defined flood areas (Flood Insurance Rate Map panel 15003C0365F). Approximately 80 percent of MHS campus is in Flood Zone X (areas determined to be outside the 0.2% annual chance floodplain). The makai portion of the campus, which accounts for approximately 20 percent of the campus area, is in Flood Zone A (100 year flood plain, no base flood elevation determined).

2.8 NATURAL HAZARDS

Tsunami

MHS is not located in a tsunami inundation area.

Earthquake

The island of Oʻahu is located in Seismic Zone 2A, which is characterized as being susceptible to earthquakes that may cause minor damage to structures. Zone 2A is not associated with a particular fault zone.

2.9 BOTANICAL RESOURCES

Common Bermuda grass is the predominant groundcover at the project site. Monkey pod and silver trumpet trees are observed on the site. Coconut palms are planted behind the softball stadium where the right turn out only lane is proposed (Park, 2010).

2.10 WILDLIFE RESOURCES

Located in the highly urbanized Kakaʻako Mauka Area, fauna on the project site is limited to birds and mammals that have adapted to the urban environment (EDAW, 2009). According to the United States Fish and Wildlife Service (FWS)'s comment letter dated October 19, 2010 (*Appendix I*), there are no endangered or threatened species or critical habitats on the project site. However, seabird species such as the wedge-tailed shearwater may be impacted by the project lighting. With the exception of the tennis courts, the facilities will have security lighting but will not be lit for evening play. Full cutoff dark night fixtures will be used.

2.11 CULTURAL RESOURCES

A Cultural Impact Assessment (CIA) was conducted for this project by Cultural Surveys Hawaii, Inc. (*Appendix A).* The findings are summarized below.

Traditional Cultural Landscape

The current project area is located within the ʻili (small land division within an ahupuaʻa) of Kewalo, east of Kakaʻako ʻIli and mauka of Kukuluāeʻo ʻIli. Land Commission Award and other

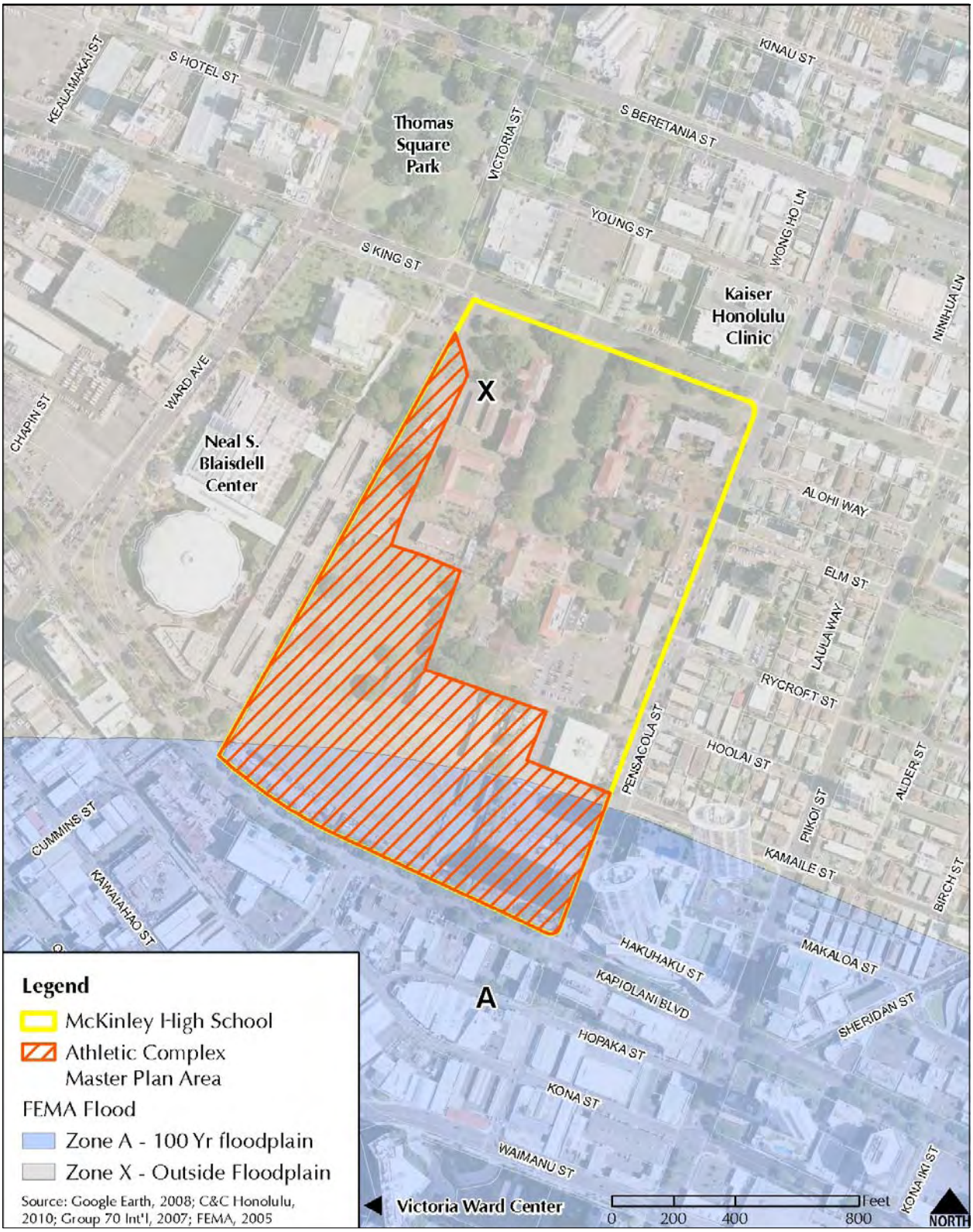


Figure 2.2: Federal Emergency Management Agency Flood Insurance Rate Map (FIRM)

historic-era documents identify Kewalo as the area between Cooke and Sheridan Streets, mauka of Queen Street. Kewalo literally means "the calling (as an echo)."

From the legendary accounts, it appears that Kewalo, Kukuluāeʻo, and Kakaʻako were traditionally noted for their fishponds and salt pans, for marsh lands where *pili* grass and other plants were collected, for ceremonial sites such as Puʻukea Heiau, Kewalo Spring, and Kawailumalumai Pond, and for the trails that allowed transport between the more populated areas of Waikīkī and Honolulu. Important chiefs were born in the area and conducted religious rites there. Commoners traveled to the area to procure food and other resources. Makaainana also lived in the area, possibly adjacent to the ponds and the trails.

Kewalo is located between two major precontact population centers, Kou (the area of downtown Honolulu surrounding the harbor) and Waikīkī. In Waikīkī, a system of loʻi (irrigated fields) taro fed by streams descending from Makiki, Mānoa, and Pālolo valleys blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou possessed shoreward fishponds and irrigated fields watered by ample streams descending from Nuʻuanu and Pauoa Valleys. The pre-contact population and land use patterns of Kewalo may have been derived from its relationship to these two densely populated areas and likely participated in some of the activities associated with them.

Community Consultation

The following organizations have been contacted regarding the McKinley High School ACMP: Office of Hawaiian Affairs (OHA); State Historic Preservation Division (SHPD); Hui Mālama O Nā Kūpuna O Hawaiʻi Nei; Oʻahu Island Burial Council; Kawaihaʻo Church, and 20 community members with cultural and historic knowledge of the project area and its surroundings.

Participants are supportive of the athletic complex renovation and stressed the importance of a sense of place. They called for awareness of Hawaiʻiʻs unique setting with regard to architecture and use of native plants surrounding the buildings. Participants spoke of the prominence of MHS and several also noted the controversial role of President McKinley in the history of these islands.

SHPD noted historic water sources, loʻi kalo, and trails used for gathering, settlement, and access to the shoreline within the project vicinity. SHPD indicated the possibility of finding cultural resources below ground due to historic building practices of building primarily above ground while leaving underground layers less disturbed. Pre-contact and historic burials have been disturbed and later re-interred in nearby areas.

2.12 ACHAEOLOGICAL RESOURCES

An Archaeological Inventory Survey Plan (AISP) was prepared for the proposed project by Cultural Surveys Hawaii, Inc. (*Appendix B).* Previous archaeological studies and background research suggest that the study area is located within Kewalo region. Before the nineteenth century, the region was less populated than the nearby centers of Waikīkī and Honolulu. Maps and documents produced during the nineteenth century indicate that the region was utilized by Hawaiians for fishpond farming, salt making, wetland agriculture, and burial. It is likely that

some pre-contact cultural deposits including pit features and/or burials remain intact beneath the late nineteenth and early twentieth century fill layers covering Kewalo today.
The project area is located mostly in what was the wetland plain of Kewalo. This area provided Hawaiians with the environment needed for the cultivation of fishponds, salt ponds, and subsistence crops such as taro. The features expected from these cultural activities include berms, lo'i (irrigated ponds), and fishpond sediments. Following the initial years of European contact, Westerners engaged in new massive agricultural ventures. Immigrant workers from Asia were brought to Hawai'i to labor in these new agricultural ventures and, as a result, rice also became a major crop in many areas. The wetlands of Kewalo were an ideal environment for the cultivation of rice, and the area yielded much of its traditional taro cultivation land to rice production.

In the early twentieth century, the land was altered more intensely for land-reclamation plans; the resulting dredge and fill projects obliterated what remained of traditional Hawaiian cultivation practices in the wetlands of Kewalo. The original wetland sediments as well as historic fill have been previously documented within the vicinity of the current project area and will most likely be encountered during the proposed archaeological inventory survey.

Previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka'ako area, which includes the Kewalo area. Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

2.13 CIRCULATION

A Traffic Impact Assessment Report (TIAR) was prepared by AECOM, Inc in December 2010 (*Appendix C)* and is summarized below.

Streets and Access

The project is bounded by S. King Street to the north, Kapi'olani Blvd. to the south, and Pensacola St. to the east.

King Street is an east-west, one-way, four-lane arterial in the eastbound direction. On-street parking is provided on the north side of King Street between Ward Avenue and Pi'ikoi Street.

Kapi'olani Blvd. is a six-lane east-west arterial, connecting Kaka'ako in the west with Kapahulu in the east. At South Street, Kapi'olani Blvd. consists of three lanes in the eastbound direction and three lanes in the westbound direction. Kapi'olani Blvd. merges with S. King Street, which provides access to Downtown Honolulu and Interstate 1 (H-1) at Middle Street. No on-street parking is provided along Kapi'olani Blvd. during the weekday AM and PM peak periods. Contra-flow lanes are created through coning in order to accommodate westbound traffic during the weekday AM peak periods and eastbound traffic during the weekday PM peak periods. For the weekday AM peak period, cones are placed at 5:00 AM from Cooke Street to Kaimuki Avenue and removed at 8:30 AM starting from Kaimuki Avenue. For the weekday PM

peak period, cones are placed at 3:00 PM from Kalakaua Avenue toward McCully and west of Ward Avenue; the cones are removed at 5:30 AM starting at Ward Avenue going east.

Pensacola Street, located Diamond Head of the MHS campus, is a north-south, one-way arterial in the makai direction. The street operates as a four- to five-lane southbound roadway in a couplet with Pi'ikoi Street, with on-street parking provided during the weekday AM and PM peak periods on the west side of the street. The street has a 76' right of way and gutters, curbs, and sidewalks on both sides. On-street parking is permitted on both sides of the road. The posted speed limit is 25 miles per hour between S. King Street and Kapi'olani Blvd. because it is in a school zone.

Ward Avenue is a four-lane, two-way north-south collector. Left turn pockets are provided at most intersections. On-street parking is provided on both sides of the street, with curb cuts for driveways serving various commercial uses.

South Street is a north-south collector connecting Ala Moana Blvd. in the south with S. King Street—herein referred to collectively as King Street—in the north. South Street operates with three to five lanes in a one-way northbound couplet with Punchbowl Street one block to the west. Between 3:30 PM and 5:30 PM, parking is restricted on both sides of this segment of South Street and it operates with five lanes of traffic.

Pi'ikoi Street is a north-south, two-way arterial between Ala Moana Blvd. and Kapi'olani Blvd., with two to three lanes in the southbound direction and three to four lanes in the northbound direction. No on-street parking is provided during the weekday AM and PM peak periods and traffic is separated by a raised, landscaped median. Pi'ikoi Street becomes one-way north of Kapi'olani Blvd., with four to five lanes in the northbound direction. On-street parking is provided on Pi'ikoi Street north of Kapi'olani Blvd.

State Route 92 (SR 92) is a six lane east-west highway running south of the project. SR 92 east of Bishop Street is known as Ala Moana Boulevard and west of Bishop Street is known as Nimitz Highway. SR 92 provides access to the project through Pi'ikoi Street, Kamakee Street, and, Ward Avenue.

Interstate 1 (H-1) is a six lane east-west highway running north of the project. H-1 provides access to the project through Kinau Street and Punchbowl Street.

Currently, there are four access driveways to MHS off of Pensacola Street, three access roads off of King Street, and one access driveway off of Kapi'olani Blvd. (under construction with the softball stadium). Two access driveways off of Pensacola Street are adjacent to the Adult Education parking lot and the other two access driveways are adjacent to the DOE Main Shop parking lot, which is primarily not for public use. Internal roadways provide access from one end of the campus to the other.

The ACMP proposes an expansion to the driveway off of Kapi'olani Blvd. to accommodate a right-turn in only access with a queuing lane. The right-turn in only driveway will serve as an access to the YMCA parking structure and to the new 100-stall parking lot near the rifle range. The 20-foot wide, right-turn out only, paved driveway is currently being constructed with the softball stadium. Current construction will end the driveway at the rear of

the softball bleachers. The master plan proposes to extend this driveway to the new rifle range facility and parking.

Traffic Impacts

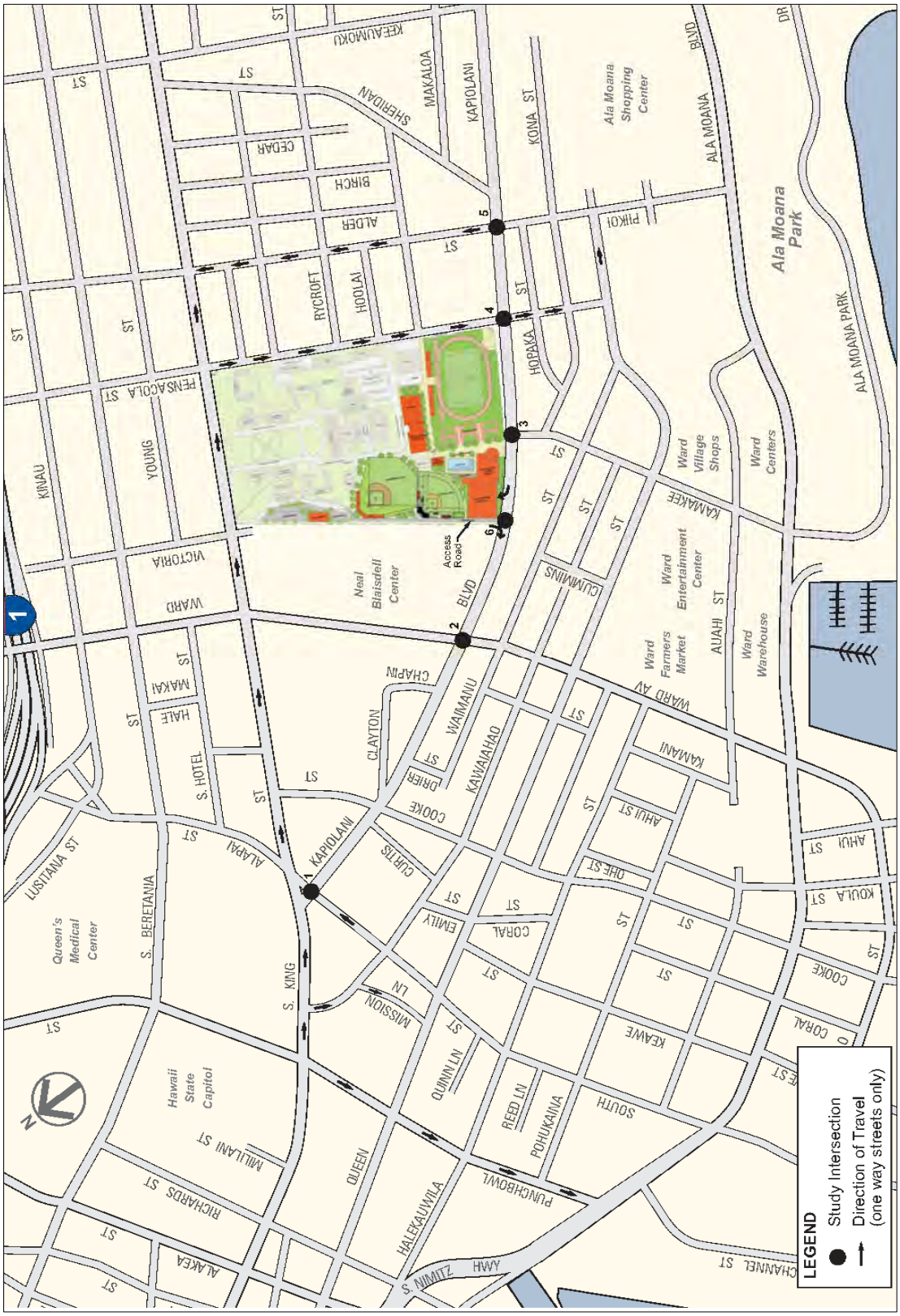
The following scenarios were evaluated to identify the potential transportation impacts of the project:

- Existing Conditions;
- Existing plus Project Conditions;
- 2030 Cumulative Conditions; and
- 2030 Cumulative plus Project Conditions.

The term "Cumulative" herein refers to build-out conditions in year 2030. The Cumulative Conditions scenario assumes that the Kakaʻako Mauka Area Plan adopted in 1982 remains in place and none of the major circulation revisions proposed in the 2007 Kakaʻako Mauka Area Plan are implemented (i.e. reversal of Piʻikoi Street/Pensacola Street).

The following six study intersections were assessed for this TIAR *(Figure 2.3)*:

1. Kapiʻolani Boulevard / South Street / King Street (signalized);
2. Kapiʻolani Boulevard / Ward Avenue (signalized);
3. Kapiʻolani Boulevard / Kamakee Street (signalized);
4. Kapiʻolani Boulevard / Pensacola Street (signalized);
5. Kapiʻolani Boulevard / Piʻikoi Street (signalized); and,
6. Kapiʻolani Boulevard / Outbound Access Driveway (one-way stop-controlled).



Source: AECOM, 2010.

Figure 2.3 Study Intersections

Level of Service (LOS) was analyzed at these six study intersections, which represent locations where the project could potentially impact roadway operations. Intersection LOS measurements range from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. LOS below LOS E is considered unacceptable. All six study intersections were analyzed for the peak hour of the weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods. The results are summarized below.

Existing Conditions

All study intersections operate at acceptable LOS under Existing Conditions in both the weekday AM and PM peak hours. Existing Conditions intersection LOS is summarized in *Table 2.1.*

Intersection		Control Type	Weekday AM Peak Hour		Weekday PM Peak Hour	
			LOS	Delay	LOS	Delay
1	Kapiʻolani Blvd. / South St. / King St.	Signal	C	28.9	C	33.5
2	Kapiʻolani Blvd. / Ward Ave.	Signal	D	38.4	D	46.2
3	Kapiʻolani Blvd. / Kamakee St.	Signal	A	4.0	A	6.6
4	Kapiʻolani Blvd. / Pensacola St.	Signal	B	15.0	C	21.5
5	Kapiʻolani Blvd. / Piʻikoi St.	Signal	B	18.3	C	21.5
6	Kapiʻolani Blvd. / Outbound Access Driveway (non-exist, currently being constructed with softball stadium)	OWSC	---	---	---	---

Source: AECOM, 2010.
Notes: OWSC = One-way stop control

Table 2.1: Intersection Level of Service – Existing Conditions

Existing plus Project Conditions

All study intersections would operate at acceptable levels of LOS under Existing plus Project Conditions in both the weekday AM and PM peak hours. Existing plus Project Conditions intersection LOS is summarized in *Table 2.2.*

Intersection		Peak Hour	Existing Conditions		Existing plus Project Conditions	
			LOS	Delay	LOS	Delay
1.	Kapiʻolani Blvd. /South St. / King St	AM PM	C C	28.9 33.5	C C	28.9 33.5
2.	Kapiʻolani Blvd. / Ward Ave.	AM PM	D D	38.4 46.2	D D	38.5 46.2
3.	Kapiʻolani Blvd. / Kamakee St.	AM PM	A A	4.0 6.6	A A	4.2 6.9
4.	Kapiʻolani Blvd. / Pensacola St.	AM PM	B C	15.0 21.5	B C	15.0 21.5
5.	Kapiʻolani Blvd. / Piʻikoi St.	AM PM	B C	18.3 21.5	B C	18.3 21.5
6.	Kapiʻolani Blvd. / Outbound Access Driveway	AM PM	---	---	B B	11.2 13.7

Source: AECOM, 2010.

Table 2.2: Intersection Level of Service—Existing plus Project Conditions

2030 Cumulative Conditions

Under the 2030 Cumulative Conditions the Kapiʻolani Blvd./South Street/King Street intersection would operate at unacceptable LOS (LOS F) during the PM peak hour and Kapiʻolani Blvd./Ward Avenue intersection would operate at unacceptable LOS (LOS F) during AM and PM peak hours. Other study intersections would operate at acceptable levels of LOS under the 2030 Cumulative Conditions in both the weekday AM and PM peak hours. The 2030 Cumulative Conditions intersection LOS is summarized in *Table 2.3.*

Intersection		Peak Hour	Existing Conditions		2030 Cumulative Conditions	
			LOS	Delay(1)	LOS	Delay(1)
1.	Kapiʻolani Blvd. /South St. / King St	AM PM	C C	28.9 33.5	C **F**	30.9 **>80.0**
2.	Kapiʻolani Blvd. / Ward Ave.	AM PM	D D	38.4 46.2	**F** **F**	**>80.0** **>80.0**
3.	Kapiʻolani Blvd. / Kamakee St.	AM PM	A A	4.0 6.6	B B	10.3 12.3
4.	Kapiʻolani Blvd. / Pensacola St.	AM PM	B C	15.0 21.5	C E	31.2 79.8
5.	Kapiʻolani Blvd. / Piʻikoi St.	AM PM	B C	18.3 21.5	C E	25.5 69.3
6.	Kapiʻolani Blvd. / Outbound Access Driveway	AM PM	---	---	---	---

Source: AECOM, 2010.

Notes:

- **Bold** indicates intersection operating at unacceptable LOS (LOS F).

(1) Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis.

Table 2.3: Intersection Level of Service—2030 Cumulative Conditions

2030 Cumulative plus Project Conditions

In the 2030 study intersections are expected to operate at the same LOS with and without the project. Under the 2030 Cumulative plus Project Conditions Kapiʻolani Blvd./South Street/King Street intersection would operate at unacceptable LOS (LOS F) during PM peak hour and Kapiʻolani Blvd./Ward Avenue intersection would operate at unacceptable LOS (LOS F) during AM and PM peak hours. Other study intersections would operate at acceptable levels of LOS under the 2030 Cumulative plus Project Conditions in both the weekday AM and PM peak hours. The 2030 Cumulative plus Project Conditions intersection LOS is summarized in *Table 2.4.*

Intersection		Peak Hour	2030 Cumulative Conditions		2030 Cumulative plus Project Conditions	
			LOS	Delay[(1)]	LOS	Delay[(1)]
1.	Kapiʻolani Blvd. /South St. / King St	AM	C	30.9	C	30.9
		PM	**F**	**>80.0**	**F**	**>80.0**
2.	Kapiʻolani Blvd. / Ward Ave.	AM	**F**	**>80.0**	**F**	**>80.0**
		PM	**F**	**>80.0**	**F**	**>80.0**
3.	Kapiʻolani Blvd. / Kamakee St.	AM	B	10.3	B	10.8
		PM	B	12.3	B	13.2
4.	Kapiʻolani Blvd. / Pensacola St.	AM	C	31.2	C	31.4
		PM	E	79.8	E	79.8
5.	Kapiʻolani Blvd. / Piʻikoi St.	AM	C	25.5	C	25.6
		PM	E	69.3	E	70.2
6.	Kapiʻolani Blvd. / Outbound Access Driveway	AM	---	---	B	14.9
		PM			C	23.9

Source: AECOM, 2010.
Notes:
- **Bold** indicates intersection operating at unacceptable LOS (LOS F).
(1) Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis.

Table 2.4: Intersection Level of Service—2030 Cumulative plus Project Conditions

The two intersections with LOS F were evaluated to determine if the project contributed to any intersection impacts. The results of the evaluation are as follows:

1. Kapiʻolani Blvd / South Street / King Street

This signalized intersection would operate at LOS F with 107.5 seconds of delay under 2030 Cumulative Conditions and with 107.5 seconds of delay under 2030 Cumulative plus Project Conditions in the weekday PM peak hour. The project would add eleven vehicles during the weekday PM peak hour to the westbound right movement. The project trips comprise well under one percent of the total traffic volumes at the intersection in the PM peak hour, and the project would not increase the volume-to-capacity (v/c) ratio of the intersection. Therefore, the project would not cause a significant impact at this intersection.

2. Kapiʻolani Blvd / Ward Avenue

This signalized intersection would operate at LOS F under 2030 Cumulative Conditions and 2030 Cumulative plus Project Conditions in the weekday AM and PM peak hours. The project increases the intersection average delay by 1.9 seconds during the weekday AM peak hour and 0.5 seconds during the weekday PM peak hour. During the AM peak hour, the project adds

two vehicles to the southbound through movement, two vehicles to the westbound left movement, six vehicles to the westbound through movement, and nine vehicles to the westbound right movement, for a total of 19 vehicles added to the intersection. During the PM peak hour, the project adds four vehicles to the southbound through movement, 14 vehicles to the westbound through movement, and 20 vehicles to the westbound right movement, for a total of 38 vehicles added to the intersection. The project trips comprise well under one percent of the total traffic volumes, and the project would only increase the volume-to-capacity (v/c) ration by a maximum of 0.01 in the weekday AM peak hour. Therefore, the project would not cause a significant impact at this intersection.

Impacts to State Highway Facilities

Project trips would be added to State highway facilities including H-1 and SR 92. During the weekday AM peak hour 14 vehicles would be added on H-1 (7 westbound, 7 eastbound) and 6 vehicles would be added on SR 92 (3 westbound, 3 eastbound). During the weekday PM peak hour 30 vehicles would be added on H-1 (15 westbound, 15 eastbound) and 9 vehicles would be added on SR 92 (5 westbound, 4 eastbound). The share added to State highway facilities H-1 and SR 92 is relatively low compared to the existing traffic on these facilities. Thus, the project-generated trips are not expected to have an impact on State highway facilities and further analysis was determined to be unnecessary.

Highway facilities such as H-1 and SR 92 would be utilized by construction trucks to travel to and from the project. Trucks would be utilized to transport oversized equipment / materials and overweight loads on state highway facilities. A permit from the State of Hawai‘i DOT Highway Division will be obtained prior to transporting oversized materials and overweight loads. It is anticipated that construction activities would occur Monday through Friday from 7:00 AM to 3:30 PM. Deliveries are expected to occur before or after school hours. Temporary traffic impacts would result from truck movements and construction vehicles traveling to and from the project. Due to the larger turning radii and slower movements of construction trucks, a temporary reduction in capacity in the project vicinity is expected. In order to minimize traffic impacts on neighboring roadways, truck trips should be scheduled during off-peak hours.

If it is determined that travel lane or sidewalk closures would be needed during construction, the closures would be coordinated with the City and County of Honolulu and State of Hawai‘i Department of Transportation (DOT) in order to minimize the impacts on local traffic.

In summary, project-related construction activity, including both construction truck traffic and additional vehicular traffic from construction workers, would not substantially affect vehicular circulation. In addition, any potential impacts would not be considered significant due to their temporary and limited duration.

Parking

The project site currently provides 281 parking spaces, including 12 accessible spaces. There are three parking lots within the site: one main parking lot with 115 spaces near the Multi-Purpose Classroom Building; a small parking lot with 35 spaces near the Auditorium and Cafeteria; and a small parking lot with 28 spaces near the DOE Main Shop Building. The remainder of the spaces is provided along the curb of access roads within MHS campus. On-street parking is prohibited during the weekday AM and PM peak periods on both sides of Kapi‘olani Blvd.

bordering the project. Unrestricted parking is provided on both sides of Pensacola Street bordering the project. On-street parking on the south side of King Street is prohibited during weekday AM and PM peak hours and parking is prohibited on the north side only during weekday PM peak hours.

A new 100-stall parking lot is planned at the relocated rifle range which will increase the total number of parking stalls on MHS campus for MHS use to 381 stalls. The new YMCA Wellness Center will include a 340-stall parking structure which will be used exclusively by YMCA staff and members.

A new 4-bus drop-off lane will be provided along Pensacola Street near the track/field facility. This lane will provide special event bus pick-up/drop-off for MHS students going off campus and will support team travel for practice and games.

According to HCDA's Mauka Area Rules, parking requirements are 0.9 stalls per each 10 students of design capacity plus 1 stall per 444 SF of office floor area. For MHS, with a design enrollment of 2,200 students, a total of 222 stalls are required. The total number of stalls planned exceeds HCDA parking requirements by 159 stalls. In comparison, the Institute of Transportation Engineers (ITE) Parking Generation Manual estimates demand for a high school with 2,200 students at 198 spaces and estimates demand for a general office space of 10,642 square feet at 16 spaces. The total estimated ITE demand for the existing project site is 214 parking spaces. The proposed project will provide up to 381 marked parking spaces, which exceeds the requirement of both standards. The athletic facilities shown in the master plan are accessory to the school use and the project does not propose any additional office space or increase in student body. Therefore, the project does not incur additional parking requirements. However, additional parking is required due to the new land use (YMCA Wellness Center). The weekday peak period estimated parking demand for athletic clubs according to the ITE's Parking Generation (Third Edition) is 163 stalls. The YMCA Wellness Center provides 340 new parking spaces in a three-story parking structure adjacent to the YMCA Wellness Center, exceeding the estimated demand.

Given the convenience to transit routes and frequency of service, MHS will continue to encourage transit use for sports events.

Mass Transit

The MHS campus project can be conveniently accessed from existing TheBus routes 1, 1L, 2, 3, 9, 13, 17, 18, 40, 40A, 52, 53, 62, A, B, and C. Major stops near the project include: Kamakee Street/Kapiʻolani Blvd., Ward Avenue/Kapiʻolani Blvd., Pensacola Street/King Street, Ward Avenue/King Street, Pensacola Street/Hoolai Street, Pensacola Street/Elm Street, and Pensacola Street/King Street. Crosswalks are available to access points along Kapiʻolani Blvd., Pensacola Street, or King Street to enter the project site.

A screenline analysis was conducted for the existing transit service in the project area based on work conducted for the Kakaʻako Mauka Area Plan. A screenline is a theoretical grouping of transit lines that serve an identifiable corridor or area. A screenline analysis is a comparison of ridership and capacity for each screenline (capacity utilization ratio). The transit analysis assumes three screenlines for Kakaʻako—west, north, and east. The screenline analysis result shows that all three screenlines currently operate under capacity, with higher utilization on

buses serving the north screenline. Lines grouped under the west screenline carry the majority of trips into and out of Kaka'ako.

An Existing plus Project screenline capacity utilization was conducted and the result shows that the project is expected to generate eight transit trips in the weekday AM peak hour and 17 transit trips in the weekday PM peak hour. This level of project-generated transit ridership is not expected to result in a significant impact to transit ridership and capacity. Although the project would increase vehicular traffic on major transit service corridors, the project's overall effect on intersection level-of-service (LOS) and delay is negligible at most study intersections. Therefore, project-generated vehicular traffic is not expected to result in a significant impact to transit operations.

In summary, all three screenlines will continue to operate under capacity and, with many mass transit stops conveniently located near the project site, the mass transit system could be effectively utilized to support MHS sport events. Future implementation of the east-west alignment fixed guideway system could also increase transit utilization to the MHS campus. The nearest fixed guideway system stop is proposed at Ward / Halekauwila St., which is less than 10 minutes walk to MHS. Use of such transit systems will continue to be encouraged in the future.

2.14 PUBLIC FACILITIES

A preliminary engineering report was conducted by Austin, Tsutsumi & Associates, Inc. (*Appendix D).* The findings are summarized below.

Water

The Honolulu Board of Water Supply (BWS) operates and maintains the water system serving MHS. There are two (2) existing domestic water meters on Pensacola Street and one (1) existing 8-inch detector check meter for fire protection on King Street currently serving the campus. The existing fire protection line threads through the campus with fire hydrants located adjacent to the interior roadways. The domestic system loops through the campus with 4-inch and 6-inch lines. Individual laterals tap off this loop and connect to the buildings. The off-site mains include a 12-inch main in Kapi'olani Blvd., 12-inch main in Pensacola Street, and 12-inch main in King Street. There are also existing fire hydrants along these major street frontages.

The project will require an average daily demand of about 61,580 gallons per day (gpd), and a peak hour flow rate of approximately 385 gallons per minute (gpm), based on an 8-hour day. The standard fire flow required for the project is 2,000 gpm for a 1-hour period. The actual required fire flow will need to be determined based on building sprinkler system layouts and building types. See *Appendix D* for preliminary water demand calculations. BWS's pre-consultation comment letter dated October 19, 2010 indicated that the existing water system is presently adequate to accommodate the proposed project (*Appendix I*).

Existing facilities will continue to be fed from the existing water main and fire protection systems. The proposed athletic complex will be served from a new connection to the 12-inch main in Kapi'olani Blvd. A new 8"x2" FM meter is planned with a 12-inch water line serving all new facilities, including provisions for irrigation demand and fire protection. Fire hydrants

will be located adjacent to the main plaza which will serve as the fire lane for the complex. Buildings that have fire sprinklers will have a minimum 6-inch fire sprinkler connection as well as 6-inch fire department connection. Domestic water laterals will typically be 2-1/2 inches. This project will also incorporate water efficient technology and design, and appropriate vegetation and landscaping to moderate water irrigation demands. Previous investigation for the availability of non-potable water for irrigation of the softball field and landscaped areas revealed that there is no available existing non-potable water source. This option will continue to be explored through the future design phases.

Sewer

The existing McKinley facility is serviced through sewer laterals ranging in size between 6-inches to 10-inches in diameter, primarily running out to Kapiʻolani Blvd. and Pensacola Street. There is an existing 48-inch sewer main that runs under Pensacola Street turning west onto Kapiʻolani Blvd. There is also a 36-inch main in Kapiʻolani Blvd. Wastewater flows to the Ala Moana Sewer Pump Station and then to the Sand Island Wastewater Treatment Plant for treatment and ocean disposal.

According to Austin, Tsutsumi & Associates, Inc. (2010), the project's preliminary wastewater contributions are calculated at approximately 47,525 gpd. Assuming an 8-hour use period, designed peak flow translates to about 426,920 gpd. Refer to *Appendix D* for preliminary wastewater contribution calculations.

The existing 10-inch sewer main will be abandoned and/or removed and a new 10-inch sewer line installed to provide the main trunk serving the campus. The new line will run under the proposed plaza area and connect to the existing 36-inch sewer main in Kapiʻolani Blvd. Internally, 6-inch and 8-inch laterals will branch off the 10-inch line and provide connections to the facilities, including the YMCA, locker rooms, football field, gym, baseball field, and rifle range.

Drainage

Generally, drainage runoff from the existing buildings, fields and parking areas is handled as surface flow. Existing drainage infrastructure on adjacent streets consists of catch basins and box culverts. A concrete box culvert on Pensacola Street begins as a 9'x5' box near King Street increasing to a double 10'x5' box down near Kapiʻolani Blvd. Bordering the west property line between the school and the Blaisdell Center is a Cement Rubble Masonry (CRM) lined ditch which runs mauka to makai tying into a 3'x2' box culvert. This culvert increases to a 3'x3' and collects runoff from Kapiʻolani Blvd. before discharging into a 4.5'x4' box culvert at Kamakee Street and the double box culvert in Pensacola Street. These culvert systems ultimately discharge into the drainage channel and lagoon system in Ala Moana Park.

Based on Austin, Tsutsumi & Associates, Inc. (2010)'s hydrological calculations, the estimated existing drainage runoff from the site is approximately 31.44 cubic feet per second (cfs), based on a 10-year recurrence interval/1-hour duration rainfall. Refer to *Appendix D* for preliminary drainage calculations. The estimated drainage runoff estimated for the proposed project is approximately 61.58 cfs, based on a 10-year recurrence interval/1-hour duration rainfall.

To mitigate the runoff rates and to improve water quality, five individual underground systems will be installed in various locations to detain runoff prior to discharge into the City system. Two detention systems will be located along the west side of the property within the baseball field and new parking lot areas. Two other detention systems will be located along the south side of the new track and football field. One detention system will be located adjacent to the new swimming pool. The detention systems will provide separation of suspended solids and debris from the outflowing water. If required by the City for additional stormwater quality, hydrodynamic separators or filtration devices may need to be installed prior to discharges to the City system. The new drainage system within the school campus will consist of underground drain lines ranging in diameter from 8-inch to 24-inches. The system will have a combination of connections to the building's roof gutter collection system as well as drain inlets in open areas to collect runoff from fields and pavements. The football/soccer field is anticipated to consist of artificial field turf and will have a subdrainage system to keep the field well-drained. It is anticipated that the connections to the City system will be at the CRM lined-ditch and the box culvert in Kapiʻolani Blvd.

Solid Waste

There will be demolition waste and green waste from site clearing during the construction phase. The nature of the waste that will be generated by the construction of the proposed facilities will be minimized by emphasizing full use of materials and recycling. Proper disposal of all solid waste will be specified.

After build-out, solid waste generated by operation activities on site will be collected and disposed at approved solid waste disposal facilities. Recycling of solid wastes will be accommodated and implemented to the extent practicable. Solid waste systems will be designed to comply with the applicable State and County requirements.

Electrical System

Moss Engineering conducted an electrical and utility assessment for the proposed project in August 2010 (*Appendix E*). Electrical power to the campus is provided by Hawaiian Electric Company (HECO). The electrical vault is located within a stand-alone building between Buildings G (Hirata Hall) and P-10 (Graphic Arts). Building 857 (McKinley School for Adults) at the southeast corner of the campus is serviced by a separate HECO pad-mounted transformer. From the Main Switch Board (MSB), electrical power at 480/277 Volts is distributed to various buildings on campus via a system of handholes and underground ducts. Transformers within the individual buildings convert the 480/227 Volts down to 208/120 Volts where required for general power utilization.

According to information received from HECO, the school operated at an average demand of 846 KVA or 85% of total electrical capacity between October 2007 and September 2008. The lowest average energy demand during the above period was 747 KVA in January 2007. The highest average energy demand was 974 KVA (97.4% of total electrical capacity) in August 2008. In order to accommodate the electrical requirements of the ACMP, the electrical service capacity to the campus needs to be increased by one or a combination of these means:

Option 1: Existing services to remains as-is for existing buildings and provide new service for new athletic complex improvements.

Option 2: Upgrade to larger HECO service transformer & MSB; provide new service for new athletic complex improvements.

Option 3: Provide separate HECO permanent and/or temporary services to new athletic complex facilities as they are built.

Telecommunications

Moss Engineering conducted an electrical and utility assessment for the proposed project in August 2010 (*Appendix E*). The main telephone room is located in the Administration Building. Telephone cabling is distributed to various buildings on campus via a system of handholes and underground ducts. The telephone system is maintained by a third-party vendor.

The main data (computer) room is located in the Administration Building. Data cabling is distributed to various buildings on campus via a system of handholes and underground ducts. The data system is maintained by the Department of Education's Network Support Services Branch (NSSB).

The main media room is located in Building T (Audio/Visual Center). Television cabling is distributed to various buildings on campus via a system of handholes and underground ducts. The television distribution system is maintained by the Department of Education's Network Support Services Branch (NSSB).

Telecommunications system handholes (HH) are sufficiently distributed throughout the campus and will be able to support telecommunications requirements of the new athletic complex.

2.15 AIR QUALITY

B.D. Neal and Associates examined the potential air quality impacts related to the proposed project (*Appendix F*). According to the assessment, air quality in the vicinity of the project presently is mostly affected by emissions from vehicular sources which emit carbon monoxide, nitrogen oxides, hydrocarbons and other air pollutants. Air quality data from the nearest monitoring stations operated by the Hawai'i Department of Health suggest that all State and national air quality standards are currently being met in the downtown Honolulu area.

Potential direct short-term impacts on air during project construction may include: (1) fugitive dust from soil excavation, aggregate processing and vehicle movement and (2) exhaust emissions from on-site construction equipment. Indirect short-term air quality impacts may include: emissions from disruption of traffic on nearby roadways, from slow moving construction equipment traveling to and from the project site, and from a temporary increase in local traffic caused by commuting construction workers.

Potential long-term impact on air quality from the project is primarily associated with carbon monoxide emissions from motor vehicles in areas near traffic-congested intersections.

The project traffic study indicates that with the project, peak-hour traffic volumes at the studied intersections would likely increase by 1 percent or less and the existing traffic level-of- service at these intersections is reasonably good. Based on B.D. Neal's assessment, traffic volume increases of less than about 5 percent or less than about 100 vehicles per hour and traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided.

By the year 2030, some degradation is expected to occur with or without the project, especially at the intersection of Kapiʻolani Blvd. and Ward Avenue. The project traffic study indicates that future (2030) traffic approach volumes at some intersections in the project area could exceed 10,000 vehicles per hour and level-of-service could be poor. While this suggests that "hot spot" areas could occur where the maintenance of air quality standards could be jeopardized, the very small amount of project traffic would not contribute to this significantly. Considering the small project-related traffic volumes that are expected, traffic from the proposed project should have no measurable long-term impacts on air pollution levels in the project area.

2.16 NOISE

Y. Ebisu and Associates examined the potential noise impacts related to the proposed project (*Appendix G)*. Summary of findings are summarized below.

Traffic Noise Impacts

Currently, the calculated traffic noise levels at residences along Kapiʻolani Blvd, Pensacola Street, Piʻikoi Street, and Ward Avenue exceed the 66 Equivalent Sound Level (Leq) threshold that is used by the State Department of Transportation, Highways Division, for identifying potential traffic noise impacts. By 2030, future traffic noise levels are expected to increase by 1.7 to 3.6 dB along the streets in the project environs, with or without the athletic complex. The projected increases in future traffic noise levels associated with planned athletic complex are less than 0.40 dB, and will be very difficult to perceive over the 20-year period (between 2010 and 2030). Therefore, future traffic noise impacts should not occur as a result of the proposed athletic complex.

Noise Impacts from On-site Facilities

The on-site facilities located on the ACMP represent potential concentrations of high level noise emitters in the form of crowd noise during sport events which will occur at these facilities. Typical sound levels in spectator areas are expected to be in the 85 to 95 dBA range, and intermittent rather than continuous. The crowd noise levels during sport events that are held indoors can be attenuated by the facility enclosures. The crowd noise levels during outdoor sports events are not attenuated. Outdoor public address system could also emit high levels of sound from the speakers. The outdoor and indoor sports events at MHS athletic complex will be the same as those which occur prior to the completion of the new complex. Softball playoff games at the softball stadium during the month of May is projected to generate a maximum crowd noise levels in the 65 to 70 dBA range at the closest high rise condominium, 400 feet south of the softball stadium. The next closest high rise condominium is located at the corner of Kapiʻolani Blvd. and Pensacola Street, approximately 1,000 feet from the softball stadium. The projected maximum crowd noise level at 1,000 feet is in the 55 to 60 dBA range. The

projected maximum crowd noise level at both condominiums is not significantly different from the fluctuating levels of traffic noise along Kapiʻolani Blvd. Therefore, adverse noise impacts from the athletic complex are negligible and should not be significantly different from current conditions.

Construction Noise Impacts

The potential for adverse noise impacts from short term construction activities exist, particular during school classroom hours when construction activities occur. However, the majority of the athletic complex facilities are located away from the classroom buildings, with a buffer distance of 100 feet or more. Construction noise levels are typically highest during earthwork (75 to 85 dBA at 100 feet). The use of sound attenuating barriers between the construction sites and classroom buildings may be used during classroom hours.

2.17 HAZARDOUS MATERIALS

The proposed project requires demolition of the existing rifle range, tennis courts, playcourts, Boys P.E. locker facility, cottage, portable classroom, and weight room. The existing gymnasium will also be renovated. Prior to demolition and/or renovation of existing structures, building materials will be sampled using destructive sampling protocols to collect representative samples for asbestos and lead paint analysis.

A preliminary sampling and testing of surface (0″ to 6″) soils at the existing rifle range was performed by Enpro Environmental, Inc. in October 2010 (*Appendix H*). The testing result confirmed lead present in the soil as high as 249,000 mg/kg (total lead concentration).

Prior to demolition of the rifle range, a Site Characterization will need to be performed. The soils of the range will be sampled and tested to determine the vertical and areal extent of lead concentrations. The test result will determine whether levels of total lead are above the State of Hawaiʻi Department of Health unrestricted (residential) use level of 200 mg/kg, and/or levels of leachable lead in the soil is at or above the toxicity characteristic (TC) limit of 5.0 mg/kg. Sampling protocols will adhere to the specifications of the latest edition of the Technical Guidance Manual of the Hazard Evaluation and Emergency Response Office of the State of Hawaiʻi Department of Health.

In addition to the field work and laboratory analysis, the Site Characterization will include a Work Plan, a Sampling & Analysis Plan, and a Site Specific Health & Safety Plan.

2.18 SOCIO-ECONOMIC CHARACTERISTICS

There is currently no permanent population on the project site. However, MHS students, MHS faculty, and neighborhood residents frequently use the existing athletic facilities. The Diamond Head portion of the site is temporary being used for staging for a City and County of Honolulu contractor and as yard space for a landscape nursery.
The anticipated socio-economic impacts for the local community are positive. The athletic complex will provide MHS students and the general public with quality facilities for practices, games, and recreation.

No additional long term jobs are planned as part of the project. The relocated YMCA facility is expected to retain current employees. The partnership with the YMCA, whereby the State provides the land and the YMCA develops facilities that may be used by MHS students, is a model that may be pursued for the development of other facilities within the athletic complex.

No additional population is anticipated in association with the project. Any secondary population growth induced by the project is considered negligible and would not result in significant impacts.

The project will create short-term benefits as a result of design and construction employment. Local material suppliers and retail businesses can also be expected to benefit through a multiplier effect from the increased construction activities.

2.19 PROTECTIVE SERVICES

The Main Police Station on Beretania St., 0.5 miles northwest of MHS, provides police protection to the campus.

Kakaʻako Fire Station on Queen St. (Station 9), Makiki Fire Station at Piʻikoi St. and Wilder Avenue (Station 3), and the Pāwaʻa Fire Station at Kehaka and Makaloa Streets (Station 2) are within one mile of MHS.

2.20 VISUAL RESOURCES

The project site is located in an urban residential and commercial mixed-used area. The existing views from the site consist of the surrounding urbanized area and roadways (*Figures 2.4 through 2.6*). To the north, Thomas Square Park, low-rise commercial buildings, First Chinese Church of Christ in Hawaiʻi, and the Kaiser Permanente Honolulu Clinic are visible. Low- and mid-rise residential complexes, a high-rise condominium complex, and Makiki Christian Church are visible to the east. Neal S. Blaisdell Center is located to the west. Low- and mid-rise commercial buildings and high rise condominium complexes are visible to the south.

Views of the project site consist of existing athletic fields, athletic building structures, and construction base yards. There are a few shade trees in the perimeter landscaping.

The project site is primarily located along Kapiʻolani Blvd. and is subject to Kakaʻako Mauka Area Plan View Corridor Street setback requirements. The YMCA wellness facility (2 stories

high) and its parking structure (3 stories high) will be the most visible structures of the athletic complex along Kapiʻolani Blvd. To minimize the impact, the height of the facility and the parking structure will not exceed the Mauka Area Plan's 45′ podium height limit. The architectural design will reflect MHS's unique architectural character and architectural character of the surrounding modernized Kakaʻako Mauka neighborhood (*Figure 2.7*). The design will also comply with Kakaʻako Mauka Area Plan - Urban Design Plan. The YMCA wellness facility will provide a visual transition between the Neal S. Blaisdell Center and the Honolulu Design Center and will enhance the urban landscape along Kapiʻolani Blvd. Landscape components of the master plan will improve the visual character of the project site from pedestrian and roadway perspectives. Adverse impacts on the mauka view plane from the shoreline are not anticipated.

Figure 2.4 View along S. King Street and the Project Site

Figure 2.5 View along Kapiʻolani Blvd. and the Project Site

Figure 2.6 View along Pensacola Street and the Project Site

Figure 2.7 Conceptual Rendering of the YMCA Wellness Facility along Kapiʻolani Blvd.

2.21 LAND USE CONTROLS

MHS is designated as "Urban" according to the State Land Use Commission's State of Hawai'i Land Use Classification (*Figure 2.8*). Land uses in urban areas are under respective counties' jurisdiction. Pursuant to Act 153, SLH 1976, authority was granted by the Legislature to the Hawai'i Community Development Authority (HCDA) to supersede County ordinances. HCDA has the overriding authority over local controls such as Development Plans and Zoning (Park, 2010). HCDA is responsible for revitalization plans of underused and deteriorating urban areas in the State. These areas are designated as "Community Development Districts" (CDD). The Kaka'ako area was designated as the first CDD (see *Figure 2.9*), and is composed of the Kaka'ako Mauka area and Kaka'ako Makai area.

MHS is situated in the Mauka area of the Kaka'ako Development District. HCDA's Mauka Area Plan designates MHS as a "Public" land use (*Figure 2.10*). The McKinley High School ACMP is consistent with this land use designation.

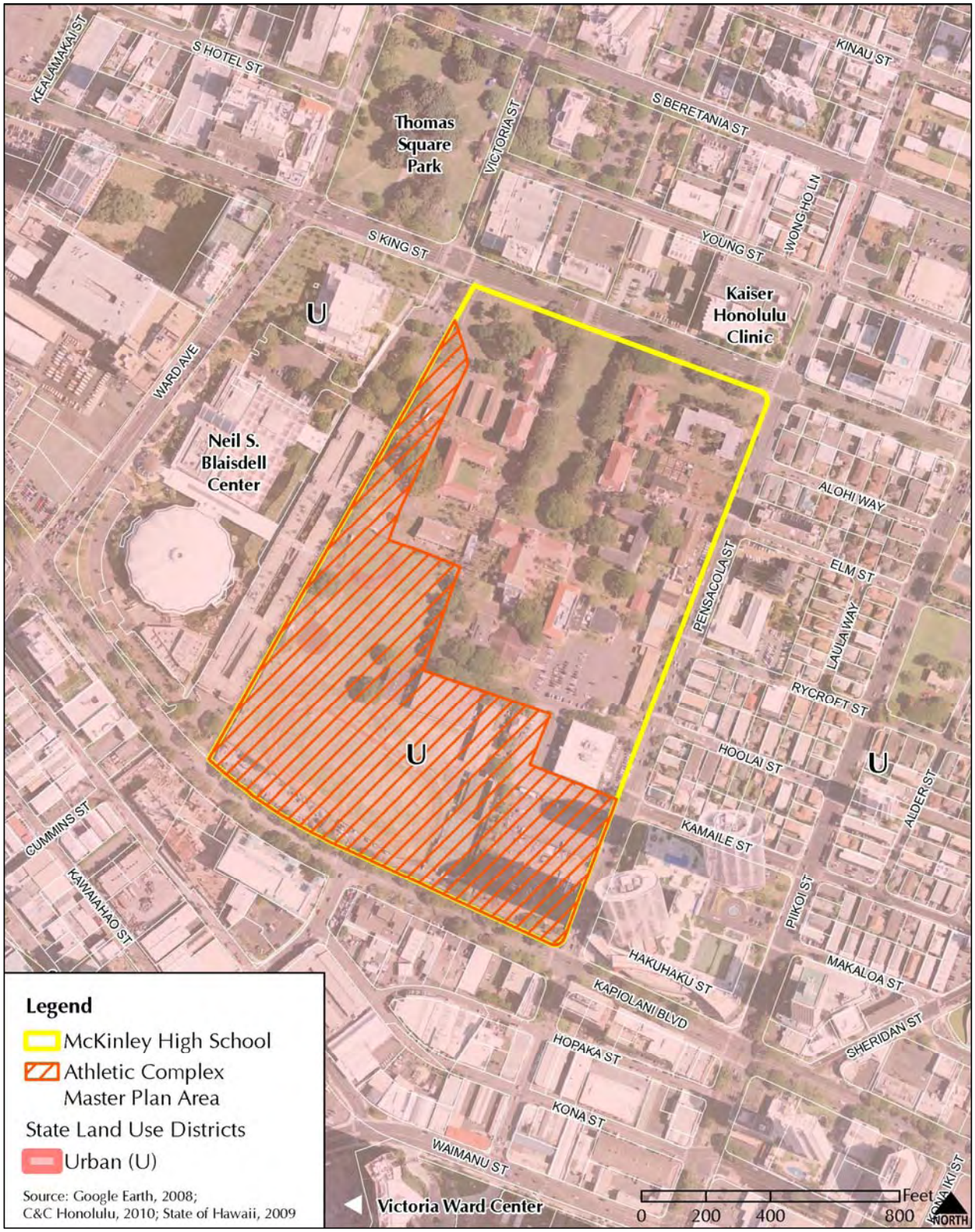


Figure 2.8: State Land Use Classification Map

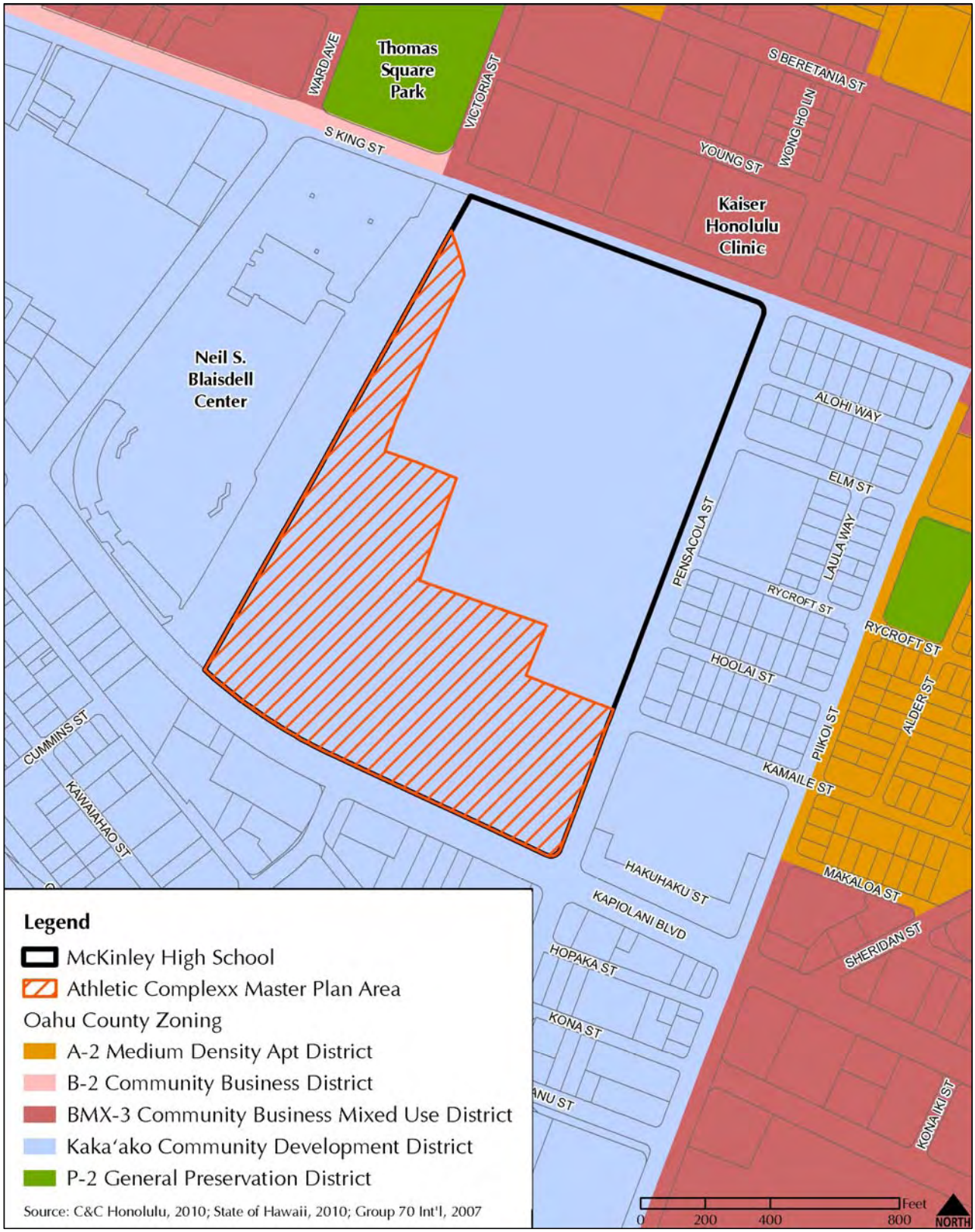
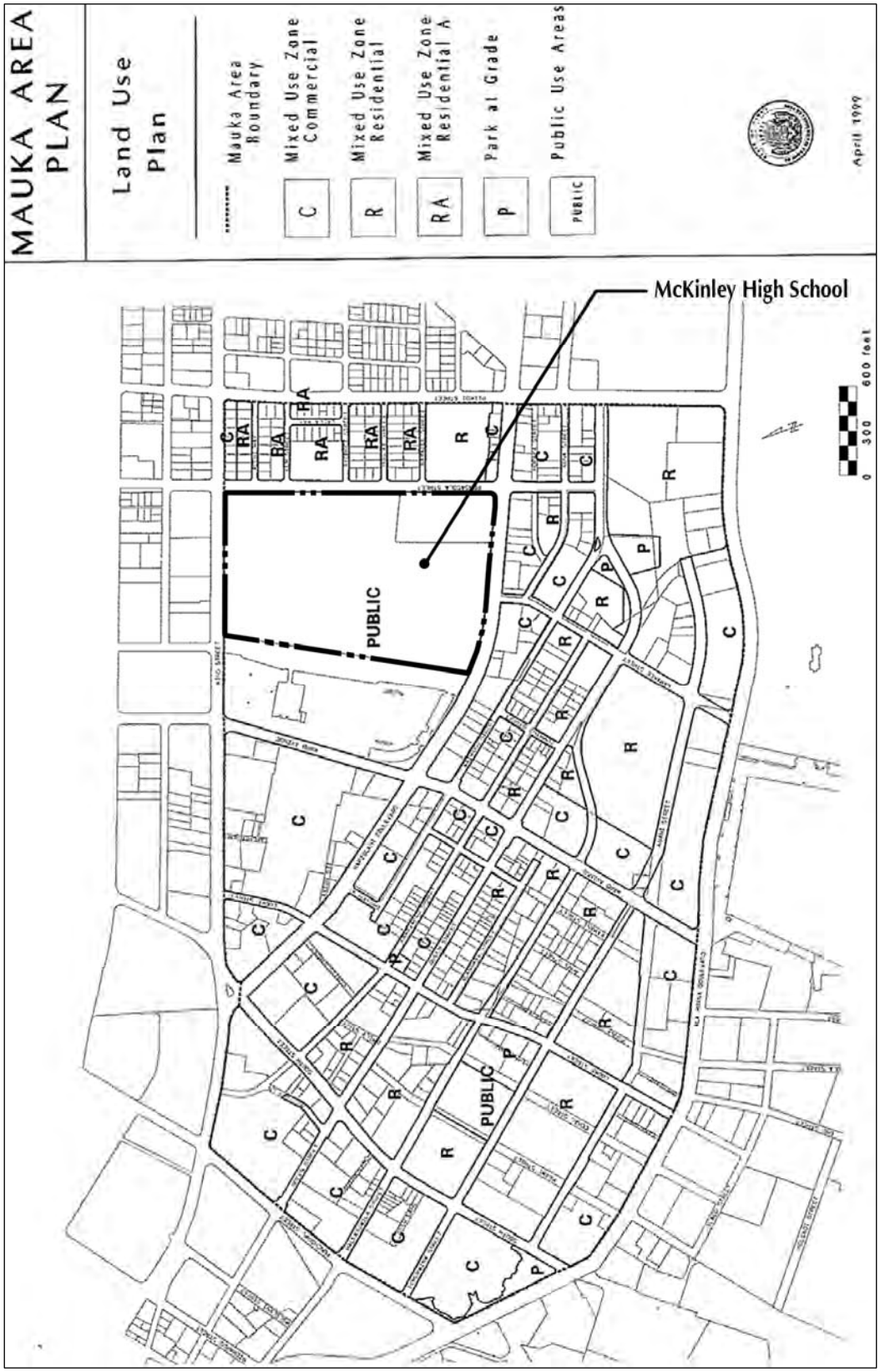


Figure 2.9 Honolulu County Zoning Map



Source: HCDA June, 2005

Figure 2.10 Kaka'ako Mauka Area Plan Land Use Map

3.0

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

3.0 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

The McKinley High School ACMP has been developed in a collaborative process with representatives from the State Department of Education, MHS administration and athletics program, and the YMCA. Through the environmental assessment of the ACMP, information has been gathered in regards to the existing conditions and features that could affect or be affected by the project, field investigations were conducted, and a process of consultation was undertaken. In summary:

- The proposed athletic complex overlays existing athletic facilities, sport fields, and open grass areas;
- There are no rare, threatened, or endangered flora or fauna on the site;
- The site is not located in the tsunami evacuation zone; however, a portion of the site is located in a flood hazard area;
- There are no streams, ponds, or wetlands on the site;
- City and County of Honolulu water and wastewater systems are available to support the ACMP;
- Existing athletic facility structures may contain hazardous materials. High concentration of lead has been found in the soil sample at the existing rifle range;
- The project vicinity is noted for historic wetlands, lo‘i kalo, and salt ponds. There is a possibility of finding cultural resources below ground. An Archaeological Inventory Survey Plan has been prepared and is currently under review by State Historic Preservation Division;
- In order to accommodate the electrical requirements of the Athletic Complex Master Plan, HECO’s electrical service capacity to the campus must be increased;
- The traffic noise levels along Kapi‘olani Blvd, Pensacola Street, Pi‘ikoi Street, and Ward Avenue currently exceed the State Department of Transportation, Highways Division’s 66 Equivalent Sound Level (Leq) threshold during peak traffic hour; and
- The area along Kapi‘olani is subject to the Kaka‘ako Mauka Area Plan View Corridor Street setback requirements.

3.1 SHORT-TERM IMPACTS

Site work (grubbing, grading, and excavation) is the first disruptive construction activity on the environment. Site work is a source of fugitive dust, therefore, the contractor shall exercise stringent dust control measures using Best Management Practices and comply with State Department of Health Chapter 60.1 Air Pollution Control regulations. Potential mitigation measures include a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust; covering open-bodied trucks at all times when in motion if they are transporting materials likely to give rise to airborne dust; and tire washing or road cleaning to eliminate sources of dust in construction areas.

Site work will also create opportunities for runoff and erosion. Grubbing, grading, excavation, and stockpiling will comply with the City and County of Honolulu 1999 Rules Relating to Soil Erosion Standards and Guidelines and the 2000 Storm Drainage Standards to reduce pollution associated with storm water runoff. Temporary erosion control measures will be incorporated during construction to minimize soil loss and erosion hazards. Best Management Practices may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, inlet protection, slope protection, stabilized construction entrances and truck wash-down areas. Permanent sediment control measures will be used once construction is completed.

A National Pollutant Discharge Elimination System (NPDES) permit for storm water runoff from construction activities will be required because more than one acre of land area will be cleared, cumulatively, for the athletic complex project. Any discharges related to project construction or operation activities will comply with applicable State Water Quality Standards as specified in Hawai'i Administrative Rules, Chapters 11-54 and 11-55 Water Pollution Control, Department of Health.

Construction noise will be most prominent during the early stages of site work and foundation work and gradually diminish as structures are erected and roofed. Once the exterior structure of a facility is completed, the remaining construction activities will take place inside the building and the exterior walls will help attenuate the noise. Land zoned for public use is placed in the Class A zoning district according to the 1996 Community Noise Control regulations. The maximum permissible sound level for excessive noise source in the Class A zoning district is 55 dBA between 7:00 AM and 10:00 PM and 45 dBA between 10:00 PM and 7:00 AM. Construction activities are likely to produce noise above the permissible daytime noise level and a Noise Permit will be required. Mitigation measures may include the use of properly muffled construction equipment, the use of equipment staging and material storage areas away from classroom buildings and noise sensitive neighbors, scheduling very noisy activities to after school hours, and the use of broadband back up alarms by construction equipment which are less audible than the high frequency beeper type alarms.

Prior to demolition and renovation of existing athletic facility structures, the following standard procedures for hazardous material sampling and disposal will be followed.

- Asbestos

Sampling and testing shall follow United States Environmental Protection Agency (USEPA) and State of Hawai'i Department of Health guidelines. Building materials with an asbestos concentration of greater than one percent shall be considered asbestos containing materials and managed per Federal and State regulations.

- Lead Paint

One sample for each structure to be demolished shall be collected. Structures with less than 5.0 mg/kg Toxic Characteristic Leaching Procedure (TCLP) lead may be demolished and disposed of in a local, municipal landfill. Structures (or segregated lead paint containing components) with greater than 5.0 mg/kg TCLP lead shall be disposed in a regulated hazardous waste management facility.

- Universal Wastes

Buildings should be inventoried for PCB containing light ballasts and mercury containing lamps. PCB containing light ballasts and mercury containing lamps shall be handled per Universal Waste regulations.

A Site Characterization shall be performed prior to demolition of the existing rifle range. If the Site Characterization soil sampling results indicate there is impacted soil near or in contact with ground water, monitoring wells will be installed to evaluate the presence and extent of ground water contamination. If levels of lead in ground water exceed the State of Hawai'i ground water standards, then ground water impact will also be delineated and addressed during the Site Characterization. Upon completion of site characterization of soils and ground water, a Site Remediation Management Plan will be developed to properly manage the soil and ground water per State and Federal regulations and guidelines. Remedial alternatives to address soil contamination may include:

1. Removing the impacted soil offsite for disposal at local and/or mainland disposal facilities.
2. Screening the soil to remove the lead and then recycling the captured material.
3. Capping the soil in place.
4. Removing the soil and capping it elsewhere on the property.

3.2 LONG-TERM IMPACTS

New Gymnasium and Replacement Boys P.E. and Athletic Locker Facilities

MHS athletic teams and students will benefit from the proximity of the locker and shower facilities to the replacement field/track and the new gymnasium. Area residents will also benefit from the use of the new gymnasium.

The locker facilities are expected to be used after school hours and on weekends. The gymnasium will be used during school hours for P.E. classes as well as after school hours and on weekends for practices and games. Users will generate noise which should not be audible beyond school grounds and should not interfere with classroom instruction. Distance from classrooms, the presence of existing street traffic and noise, existing school structures, and street trees should aid in mitigation of noise from the facilities.

The locker facilities and the new gymnasium will not result in significant visual impacts. The design and the height will resemble the existing gymnasium and athletic locker facilities.

The proposed new gymnasium will be designed to achieve the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for New Construction Silver rating. As such, the project will be designed to minimize environmental impacts and ensure that development is done in a sustainable manner.

The exterior of these facilities will be lighted at night for security and safety purposes. The brightness of the exterior lighting will be equivalent to existing lights on other school buildings and will not result in light spillage beyond school grounds.

Replacement Baseball Facilities, Rifle Range, Tennis Complex, and Field/Track Facilities

MHS athletic teams, students, and atea residents will benefit from high standard outdoor athletic facilities that will replace the existing facilities. These facilities will have security lights and will not generate light spillage beyond school grounds. Full cutoff dark night fixtures will be used to help mitigate night-flying bird fallout.

The replacement facilities will not result in adverse visual impacts. The baseball facility and the rifle range will not be visible to the public as they will be shielded from view by the YMCA facility. The tennis complex and field/track facilities will be located on the makai end of the MHS campus, similar to the existing facilities. The replacement field/track will be about half the length of the existing field/track because of the broken back configuration.

The replacement baseball facility may generate spectator noise that could be audible beyond school ground during games. However, the noise is expected to be intermittent in volume and occurrence. The crowd noise generated during the softball playoffs has been assessed in *Section 2.17* to have no adverse impacts on the surrounding properties due to the current traffic noise level.

YMCA

MHS students will benefit from swimming pool and fitness facilities at the YMCA. Residents who have YMCA membership will also benefit from the use of all YMCA facilities.

YMCA facilities are expected to be used during normal operating hours from Monday thru Friday 5:00 AM-10:00 PM, Saturday 5:00 AM-6:00 PM, and Sunday 7:00 AM-5:00 PM. Wellness facilities and support areas will be enclosed and are not expected to generate noise that will interfere with classroom instruction. The swimming pool may generate noise from youth swimming classes which will be held on weekdays and on the weekends. Distance from classrooms, the presence of existing street traffic and noise, existing school structures, and street trees should mitigate noise impact to classroom instruction.

The YMCA wellness facility (2 stories high) and the parking structure (3 stories high) will have moderate visual impact from Kapiʻolani Blvd. Both structures will comply with the Mauka Area Plan's 45' podium height limit and will meet the view corridor setback requirements. The architectural design will reflect MHS's unique architectural character and character of the "modernized" Kakaʻako Mauka neighborhood. The design will comply with the Kakaʻako Mauka Area Plan - Urban Design Plan.

The exterior of these facilities will be lighted at night for security and safety purposes. The brightness of the exterior lighting will be equivalent to existing lights on other school buildings and will not result in light spillage beyond school grounds.

MHS Athletic Complex Facilities Overall

Water, wastewater, and telecommunications infrastructure are available to accommodate the proposed facilities. The project will incorporate water efficient technology and design, and appropriate vegetation and landscaping to moderate water irrigation demands. Non-potable water sources for irrigation use will be further investigated. Runoff from the proposed facilities will be intercepted and detained by individual underground systems prior to discharge into the City system.

HECO's electrical service capacity to the campus will be increased to accommodate the electrical requirements of the Athletic Complex Master Plan improvements.

Long-term adverse impacts on ambient air quality are not anticipated as a result of the proposed project.

The project will not have a significant impact to transit ridership and capacity. The effect of project-generated vehicular traffic on transit operations in the project area is also expected to be negligible. Therefore, no mitigation measures for transit conditions are required.

Adverse impacts on traffic are not anticipated as a result of the proposed project. Under the 2030 Cumulative Conditions, Kapiʻolani Blvd./South Street/King Street intersection would operate at unacceptable LOS (LOS F) during PM peak hour and Kapiʻolani Blvd./Ward Avenue intersection would operate at unacceptable LOS (LOS F) during AM and PM peak hours regardless of the project.

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4.0
ALTERNATIVES TO THE PROPOSED ACTION

4.0 ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action are addressed in this section. The potential benefits and impacts of alternative development schemes are evaluated along with the no-action alternative.

4.1 NO ACTION ALTERNATIVE

The "No Action" alternative is addressed in this EA as required by Chapter 343 and HAR §11-200. A no action alternative would retain the status quo of the site. The No Action alternative would not provide MHS students and community residents with high quality athletic facilities, therefore not meeting the objectives of the proposed action. The "No Action" would preclude the short and long-term beneficial and adverse impacts described in this environmental assessment.

4.2 ALTERNATIVE MASTER PLAN CONFIGURATION

The design team, in consultation with the State Department of Education, investigated alternate configurations and associated costs for placement of the athletic facilities. One such alternative included provision of a football stadium with a significant amount of spectator seating. The Conceptual Master Plan shown in *Figure 1.4* was selected as the desired solution. Other configurations for placing athletic facilities would have resulted in environmental impacts significantly different from those associated with the selected alternative and described in this environmental assessment.

4.3 ACTIONS OF A DIFFERENT NATURE PROVIDING SIMILAR BENEFITS

There are actions of a different nature that could potentially provide benefits in comparison to the new McKinley High School ACMP. Students and community residents could continue to use existing athletic facilities in the neighborhood. However, HCDA's Final Supplemental Environmental Impact Statement for the Kakaʻako Draft Mauka Area Plan indicated deficiencies in park/recreational facilities within the area. This problem is likely to escalate with the on going residential development in Kakaʻako Mauka, therefore, increasing users at existing public and private park/recreational facilities in the area is not a desirable option. Additional recreational/athletic facilities could be constructed elsewhere. Depending on the location, the potential environmental impacts as a result of the permanent improvements to support the increased demand for athletic facilities could be similar or greater than the proposed action.

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5.0
PERMITS AND APPROVAL

5.0 PERMITS AND APPROVALS

The following permits are anticipated to be required for the project. Additional permits and approvals may also be required.

State of Hawai'i

Department of Health

- National Pollutant Discharge Elimination System (NPDES)
- Variance from Pollution Controls (Noise Permit)

Hawai'i Community Development Authority

- Development Permit

City and County of Honolulu

Department of Planning and Permitting

- Building Permit for Building, Electrical, Plumbing, Sidewalk/Driveway, and Demolition Work
- Grubbing, Grading, and Stockpiling
- Permit to Excavate Public Right-of-Way

Board of Water Supply

- Water Use Permit

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6.0

AGENCIES AND ORGANIZATIONS CONSULTED IN THE ENVIRONMENTAL ASSESSMENT PROCESS

6.0 AGENCIES AND ORGANIZATIONS CONSULTED IN THE ENVIRONMENTAL ASSESSMENT PROCESS

Listed below are agencies and parties contacted regarding the proposed project during the environmental assessment process. An asterisk (*) identifies agencies and organizations that submitted written comments during the pre-consultation period. All comment letters and responses are found in *Appendix I.*

Federal Agencies

U.S. Fish and Wildlife Service*

State of Hawai'i Agencies

State Department of Education, Facilities Development Branch
State Department of Education, Athletics Program
Department of Education, School Complex Superintendent's Office (McKinley/Roosevelt)
Department of Accounting and General Services*
Department of Business, Economic Development & Tourism (DBEDT)
Department of Business, Economic Development & Tourism (DBEDT), Office of Planning
Hawai'i Community Development Authority (HCDA)
Department of Transportation*
Department of Health Clean Water Branch*
Department of Land and Natural Resources (DLNR), Land Division*
Department of Land and Natural Resources (DLNR), Historic Preservation Division
Office of Environmental Quality Control
Office of Hawaiian Affairs*
McKinley High School Principal, Athletic Staff, Faculty, Student Activities Coordinator, and Student Council President

County of Honolulu Agencies

Board of Water Supply*
Department of Design and Construction*
Department of Environmental Services
Department of Planning and Permitting
Department of Parks and Recreation*
Department of Transportation Services*
Wastewater Division
Fire Department*
Police Department*

Elected Officials

The Honorable Carol Fukunaga, 11th Senatorial District*
The Honorable Brickwood Galuteria, 12th Senatorial District*
The Honorable Suzanne Chun-Oakland, 13th Senatorial District
The Honorable Tom Brower, 23rd Representative District*
The Honorable Della Au Belatti, 25th Representative District

The Honorable Karl Rhoads, 28th Representative District*
The Honorable Ann Kobayashi, Council District 5*

Other Parties and Organizations

Kaka'ako Business and Landowners Association
Makiki/Lower Punchbowl/Tantalus Neighborhood Board No. 10
Ala Moana/Kakaʻako Neighborhood Board No.11
Hawaiian Electric Company
YMCA
MHS Alumni Association
MHS Foundation
MHS PTSA
Hawaiʻi High School Athletic Association
Kakaako Improvement Association
Neal Blaisdell Center
General Growth Properties
Moana Pacific AOAO
Ala Moana/Kakaako Senior Housing: Wisteria Vista, Academy Gardens Apartment, Honuakaha Elderly Apartment, Na Lei Hulu Kupuna, and Pohulani Elderly
Makiki Christian Church
First Chinese Church of Christ in Hawaiʻi
Kaiser Permanente
HMSA
KAHEA
Hui Mālama I Na Kupuna O Hawai`i Nei
MVE Pacific
Jan Becket
Kawaiahaʻo Church
Kahu for Kaniakapupu—Kauʻikeaouli's Summer Palace
Ka Lei Maile Aliʻi Hawaiian Civic Club
Carole Kai
Kapanui, Lopaka
Kapua, Charles
Kaopuiki, Piʻilani
Mitchell, Samuel
Peahi, Curtis
Stender-Jenkins, Leimomi

7.0
FINDINGS SUPPORTING ANTICIPATED DETERMINATION

7.0 FINDINGS SUPPORTING ANTICIPATED DETERMINATION

7.1 ANTICIPATED DETERMINATION

In assessing the project in accordance with the significance criteria outlined in Chapter 343, Hawai'i Revised Statutes (HRS), and Section 11-200-12, State Administrative Rules, Contents of Environmental Assessment, it is anticipated that the proposed action will not result in significant adverse impacts on the natural or human environment. A Finding of No Significant Impact (FONSI) is anticipated for this project.

7.2 REASONS SUPPORTING THE ANTICIPATED DETERMINATION

The potential impacts of the development and future use of the proposed McKinley High School ACMP have been examined and discussed in this Draft Environmental Assessment. There are no significant environmental impacts expected to result from the proposed action. This determination is based on the following assessments:

(1) Involve an irrevocable loss or destruction of any natural or cultural resources.

The proposed project does not involve known destruction of existing natural or cultural resources. During the course of construction, DOE will perform archaeological monitoring. In the event that any cultural or archaeological remnants are unearthed, the Historic Preservation Division (SHPD) of the State Department of Land and Natural Resources (and others as required) will immediately be notified, and their treatment will be conducted in strict compliance with SHPD requirements.

(2) Curtail the range of beneficial uses of the environment.

The proposed action does not curtail the range of beneficial uses of the environment. The project will provide high standard recreational facilities to partially meet existing and future needs for such facilities in the Kaka'ako Mauka area. The athletic complex will provide beneficial use, to MHS students and faculty, residents, youth athletic teams, and YMCA members. New facilities are proposed on land currently used for recreational and support uses. Construction and operation of the new facilities will be performed in accordance with Federal, State and County regulations, thereby minimizing potential impacts to air and water quality and ambient noise levels.

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

The proposed project will not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders. Construction-related impacts of noise, dust, and

emissions will be mitigated through compliance with the State Department of Health Administrative Rules.

(4) Substantially affects the economic or social welfare of the community or State.

The proposed action will have positive direct and indirect economic benefits to the State and County through the flow of construction spending and employment income through the economy. As discussed in Section 2.10, the proposed action is not expected to adversely affect traditional Hawaiian rights related to gathering, access, or other customary activities within the project area or its vicinity or any cultural practices or beliefs. There are no Native Hawaiian (or other ethnic group) cultural practices customarily and traditionally exercised for subsistence, cultural and religious purposes that are known to occur on the project area. The scale of the new building will not affect regional wind patterns or important mauka-makai and Diamond Head-ewa views. Design and construction work will generate indirect and induced employment opportunities and multiplier effects, but not at a level that would generate any significant population expansion.

(5) Substantially affects public health.

The proposed action will not substantially affect public health. Typical short-term construction-related impacts (e.g., noise and air quality) are anticipated, but will be temporary and will comply with State and County regulations. Standard construction best management practices will be used to minimize the temporary impacts. The proposed action will not generate sufficient solid waste or other emissions to have a significant adverse effect on public health. A Site Characterization process will be conducted at the existing rifle range to determine whether there is lead contaminated soil near or in contact with ground water. Upon completion of site characterization of soils and ground water, a Site Remediation Management Plan will be developed to properly manage the soil and ground water per state and federal regulations and guidelines. Public health benefits include enhanced wellness for those who make use of the athletic facilities.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities.

Substantial effects on public facilities are not anticipated. The City and County of Honolulu water and wastewater systems are adequate and available for the proposed demands associated with the proposed project. HECO's electrical service capacity to the campus will be increased to accommodate the electrical requirements of the ACMP. The proposed action will not result in population growth.

(7) Involves a substantial degradation of environmental quality.

The ACMP encompasses areas currently used for athletic facilities and open areas and will not substantially degrade environmental quality. Long-term impacts to air and water quality, noise levels, and natural resources will be minimal. The use of standard construction and erosion control best management practices will minimize the anticipated construction-related short-term impacts.

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

Development of the proposed athletic complex is not a commitment to a larger action and will not promote substantial population growth. Instead, it partially fulfills anticipated demands for recreational facilities in an area already approved for residential growth.

(9) Substantially affects a rare, threatened or endangered species, or its habitat.

There are no endangered plants or animal species nor is there habitat for such species located within the project site.

(10) Detrimentally affects air or water quality or ambient noise levels.

Short-term effects on air, water quality or ambient noise levels during construction will be mitigated by compliance with State and County rules which regulate construction-related activities.

After construction, the potential impacts to air and water quality are anticipated to be minimal. No significant increases in traffic noise are predicted to occur as a result of project traffic following project build-out. Noise associated with school activities, including athletic facilities, are limited to the hours of 7:00 AM and 10:00 PM. Noise levels associated with crowd noise at outside venues is not expected to differ significantly from the fluctuating levels of traffic noise along Kapiʻolani Blvd.

Athletic complex facilities, including the baseball field and the field/track facility will only have security lighting. The tennis courts will be lit for evening use. Measures to mitigate light spillage into surrounding residents are described in *Chapter 3*.

(11) Affects or is likely to suffer damage by being located in an environmentally-sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The makai portion of the project site is located in Flood Zone A, which subject to a 1% annual chance of flood. Portions of the proposed YMCA wellness center and parking structure, tennis courts, and field/track facility will be located in Flood Zone A. Development and construction of buildings and facilities in this area will comply with development standards for the flood hazard district regulations, Sections 21-9.10 through 21-9.10-14, Revised Ordinance of Honolulu and other applicable State and County regulations.

(12) Substantially affects scenic vistas and view-planes identified in county or state plans or studies.

According to the Kakaʻako Mauka Area Plan (June 2005, unofficial compilation), Kapiʻolani Blvd. and Pensacola St. are designated as view corridor streets. Buildings along these view corridor streets are required to comply with view corridor setback requirements in order to preserve mauka-makai and Diamond Head-ewa views. The view corridor setback starts at the yard setback line and includes a 1:1 sloping plane setback from the 20′ height level to the 45′

podium height limit level and an additional 35′ upper-level tower setback (above 45′ height level). The YMCA wellness center and parking structure are the only two structures proposed in the master plan that are clearly visible from Kapiʻolani Blvd. Neither structure will exceed the Mauka Area Plan's 45′ podium height limit. Both structures will meet view corridor setback requirements. The architectural design will reflect MHS's unique architectural character and architectural character of the "newer" Kakaʻako Mauka neighborhood. The design will comply with Kakaʻako Mauka Area Plan - Urban Design Plan. Landscaping will be used to improve the visual character of the complex.

(13) Require substantial energy consumption.

Construction of the project will not require substantial energy consumption relative to other similar projects. Modern energy efficient appliances and fixtures and green design concepts will be used where possible. The new gymnasium will be designed to achieve a LEED Silver rating.

7.3 SUMMARY

Based on the above findings, further consideration of the project's impacts through the preparation of an Environmental Impact Statement is not warranted. A Finding of No Significant Impact (FONSI) is anticipated for this project.

8.0
LIST OF REFERENCES

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8.1 REFERENCES

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Appendices

Appendix A
CULTURAL IMPACT ASSESSMENT REPORT

Cultural Impact Assessment for the Proposed McKinley High School Athletic Complex Master Plan Project, Honolulu (Kewalo) Ahupuaʻa, Honolulu District (Kona Moku), Island of Oʻahu TMK: [1] 2-3-009:001 por.

Prepared for

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Kailua, Hawaiʻi

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Prefatory Remarks on Language and Style

A Note about Hawaiian and other non-English Words:

Cultural Surveys Hawaiʻi (CSH) recognizes that the Hawaiian language is an official language of the State of Hawaiʻi. Hawaiian language is important to daily life, and using it is essential to conveying a sense of place and identity. In consideration of a broad range of readers, CSH follows the conventional use of italics to identify and highlight all non-English (i.e., Hawaiian and foreign language) words in this report unless citing from a previous document that does not italicize them. CSH parenthetically translates or defines in the text the non-English words at first mention, and the commonly-used non-English words and their translations are also listed in the *Glossary* (Appendix A) for reference. However, translations of Hawaiian and other non-English words for plants and animals mentioned by community participants are referenced separately (see explanation below).

A Note about Plant and Animal Names:

When community participants mention specific plants and animals by Hawaiian, other non-English, or common names, CSH provides their possible scientific names (Genus and species) in the *Common and Scientific Names of Plants and Animals Mentioned by Community Participants* (Appendix B). CSH derives these possible names from authoritative sources, but since the community participants only name the organisms and do not taxonomically identify them, CSH cannot positively ascertain their scientific identifications. CSH does not attempt in this report to verify the possible scientific names of plants and animals in previously published documents; however, citations of previously published works that include both common and scientific names of plants and animals appear as in the original texts.

Abbreviations

ABCFM	American Board of Commissioners for Foreign Ministers
APE	Area of Potential Effect
CIA	Cultural Impact Assessment
CSH	Cultural Surveys Hawai‘i
DOH/OEQC	Department of Health/Office of Environmental Quality Control
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company
HRS	Hawai‘i Revised Statutes
KAHEA	Hawaiian Environmental Alliance
LCA	Land Commission Award
OHA	Office of Hawaiian Affairs
OIBC	O‘ahu Island Burial Council
SIHP	State Inventory of Historic Properties
SHPD	State Historic Preservation Division
TCP	Traditional Cultural Property
TMK	Tax Map Key
UH	University of Hawai‘i
USGS	United States Geological Survey

Management Summary

Reference	Cultural Impact Assessment for the Proposed McKinley High School Athletic Complex Master Plan Project, Honolulu (Kewalo) Ahupua‘a, Honolulu District (Kona Moku), Island of O‘ahu, TMK: [1] 2-3-009:001 por. (Burke and Hammatt 2010)
Date	December 2010
Project Number (s)	CSH Job Code: HONOLULU 21
Agencies	State of Hawai‘i Department of Health/Office of Environmental Quality Control (DOH/OEQC)
Land Jurisdiction	State of Hawai‘i
Project Location	The Project area is a portion of the present McKinley High School campus, located north-east of Kapi‘olani Boulevard and between the Neal Blaisdell Exhibition Center on the west and Pensacola Street on the east. This area is depicted on the 1998 Honolulu U.S. Geological Survey 7.5-minute series topographic quadrangle (Figure 1) and on a modern aerial photograph (Figure 2). The Project area is in the *makai* portion of the McKinley High School campus near Kapi‘olani Blvd.
Project Description	The proposed Project consists of replacement softball field (upgrade to softball stadium); expansion of the existing girl’s locker room; replacement track and football field with new fencing; replacement and expansion of tennis courts; replacement boys PE/athletic locker & shower; replacement rifle range; new parking areas; new two-story YMCA Wellness Center with a 50M swimming pool, bleachers and a new three-story parking structure; expansion of the driveway access; new walkway/plazas; new gymnasium; renovation to the existing gymnasium, and a replacement baseball field. The softball stadium and the girl’s locker room and shower facility were included within the O’Hare et al. (2009) study area. The entire Project area is approximately 22.1 acres, which includes the approximately 3.4-acre area (softball field and girl’s locker room and shower facility) that is described under O’Hare et al. (2009). In addition to the CIA, CSH also conducted an archaeological inventory survey plan for the Project area. The results of this archaeological study are presented in a companion report titled, “Archaeological Inventory Survey Plan (AISP) for the McKinley High School Athletic Complex, Honolulu (Kewalo) Ahupua‘a,

	Honolulu (Kona Moku) District, Island of Oʻahu, TMK: [1] 2-3-009:001 por."
Project Acreage	The entire Project area is approximately 22.1 acres, which includes an approximately 3.4-acre area that is covered under the O'Hare et al. 2009 archaeological monitoring plan.
Area of Potential Effect (APE) and Study Acreage	For the purposes of this Cultural Impact Assessment (CIA), the APE is defined as the approximately 22.1-acre Project area. While this investigation focused on the Project APE, the study area included the entire Honolulu (Kewalo) Ahupuaʻa.
Results of Background Research	Background research for this Project yielded the following results: 1. Covington's 1881 map indicates that the Project area is within Kewalo Ahupuaʻa and that the Kewalo Ahupuaʻa is comprised of Kakaʻako ʻIli on the east and Kukuluāeʻo ʻIli on the west. While modern districting refers to Kewalo Ahupuaʻa as Kakaʻako District, the size and placement of the letters on Covington's 1881 map suggest that Kewalo is the larger land division, with Kakaʻako ʻIli and Kukuluāeʻo ʻIli inside this *ahupuaʻa*. Moreover, Kewalo is not a continuous *ahupuaʻa*. As the Hawaiian Government Surveys office explained in 1850: "Kewalo … had its seacoast adjoining Waikīkī, its continuous kula on the plain, and one-half of Punchbowl Hill and its kalo land in Pauoa valley" (see Section 4.2.1). 2. From the *mʻoolelo*, one can see that Kewalo, with the *ʻili* of Kakaʻako and Kukuluāeʻo, was noted for its fishponds and salt pans, for the marsh lands where *pili* grass and other plants could be collected, for ceremonial sites such as Puʻukea Heiau and Kewalo Spring, for Kawailumalumai Pond, where sacrifices were made, and for the trails that allowed transport between the more populated areas between Waikīkī and Honolulu. 3. Important chiefs were born in the Kewalo area and conducted religious rites, and commoners traveled to the area to procure food and other resources. Some commoners perhaps lived in the area, adjacent to the ponds and trails. 4. Perhaps the most famous *wahi pana* (storied place) of Kewalo is the fish pond called Kawailumalumai, or "Drowning Waters," used to drown *kauwā* or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaiheheʻe* (Kamakau 1991:6), or *Ke-kai-heʻeheʻe*, which translates as "sea sliding along," suggesting that the victims were slid under the sea (Westervelt 1991:16). Early references indicate that Kawailumalumai Pond may have been near what was once the

	Ward Estate (now Neal Blaisdell Center). 5. Kewalo is located between two centers of population, Kou and Waikīkī, on the southern shore of pre-Contact Oʻahu. In Waikīkī, a system of taro *loʻi* (irrigated fields) fed by streams, descending from Makiki, Mānoa, and Pālolo valleys, blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou (the area of downtown Honolulu surrounding the harbor) possessed shoreward fishponds and irrigated fields watered by ample streams descending from Nuʻuanu and Pauoa Valleys. The pre-Contact population and land use patterns of Kewalo may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with them. 6. By the 1840s LCA claims indicate that traditional Hawaiian usage of the region and its environs seems to have remained confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from Makiki and Mānoa Valleys. Kewalo had a narrow upland section (often called "Kewalo Uka"), a larger lower river valley section, and a small coastal section (called "Kewalo Kai") joined by a small strip of land. The Project area is within this large LCA claim. Taro patches probably existed north of King Street. The lot south of the Project area consisted of fish ponds. It is evident from the 1855 La Passe map (Figure 9), that there were also once fish or salt ponds in the current Project area. An 1897 map (Figure 13) indicates that the swampy central Kewalo section was used to plant rice by the late nineteenth century. 7. The Ward Estate once covered a large portion of the Kakaʻako Mauka District. Curtis Perry Ward, a native of Kentucky, came to the Hawaiian Islands in 1853 and in 1865 married Victoria Robinson, who was descended from the Hawaiian *aliʻi* and early French and British residents. For his new family, Ward purchased at auction the 12-acre estate of Joseph Booth, Royal Patent 306, and additional contiguous lands in the Kōʻula area in 1870 (Hustace 2000:21–25). This constituted the *mauka* portion of "Old Plantation" from Thomas Square on King Street to the *makai* border at Waimanu Street. A few years later (before 1875), Ward added to his property with the purchase of 77 acres and 3,000 feet of ocean frontage in the *ʻili* of Kukuluāeʻo, *makai* of Queen Street. Workers were hired to clear the fishponds and ditches, plant taro in the fishponds, fence in pastures for the horse, plant 6,000 coconut trees, plant *kiawe* trees for firewood, and restore the *kāhaka* (salt pans)

near the shore (Hustace 2000:41).

8. In 1930, her husband having died in 1882, Victoria Ward incorporated Victoria Ward, Limited to manage the estate. In 1957, the City and County of Honolulu purchased the *mauka* portion of the estate to construct the new Blaisdell Civic Center (Hustace 2000:67, 77).

9. In 1907, when Honolulu High School moved from Fort Street to its new building on the corner of Beretania and Victoria Streets, two blocks north of its present location (Figure 18), the new school was named the President William McKinley High School. In 1898 President McKinley had signed the Newlands Resolution. From 1898 forward, Hawai‘i was referred to as the Territory of Hawai‘i (until 1959 when the official name changed to the State of Hawai‘i). Due to an increase in students, a new site was acquired in 1921, just two block from its 1907 site. McKinley High School moved in 1923 to its present location between King Street and Kapi‘olani Boulevard, west of Pensacola Street (Figure 18). McKinley High School was the only public high school in Honolulu prior to the construction of Farrington High School in 1936. McKinley High School was particularly important for the first and second generation descendants of sugar plantation immigrant workers, and more than half of the student population was composed of students of Japanese descent in the 1930s (Odo 2004:76).

10. According to the McKinley High School website, “A statue of President McKinley was commissioned for $8,000. Completed in New York, the Bronze eight-ton statue was shipped to Honolulu and dedicated on February 23, 1911” (President William McKinley High School). In 1911, the *Pacific Commercial Advertiser* reported that the statue was intended to “immortalize his memory” (*Pacific Commercial Advertiser* 1911). The *Joint Resolution to Provide for the Annexing of the Hawaiian Islands to the United States* (1898), or Newlands Resolution, signed by President McKinley, is a U.S. domestic law, not an instrument of international law. No treaty of annexation was ratified under U.S. law. Yet the McKinley Statue holds a document labeled “Treaty of Annexation” (Figure 17).

11. After World War II, the Kaka‘ako area became increasingly industrialized, and residents moved out to the newer subdivisions away from the Honolulu central area. A 1943 U.S. War Department map (Figure 16) shows the newly developed Kewalo Basin. A 1956 U.S. Army map of O‘ahu

(Figure 20) illustrates the continued construction of buildings and fields at McKinley High School, including an athletic field within the current Project area.

12. In 2009, CSH completed an archaeological monitoring plan for a portion of the McKinley High School Athletic Complex Master Plan Project (O’Hare et al. 2009). This area included the softball stadium and the girl’s locker room and shower facility. The monitoring plan specified that an archaeological monitor would be on-site during all ground-related disturbance activity below 18 in (0.45 m), due to the cultural sensitivity of the area and the number of burial finds already encountered in the vicinity of the project area. No fieldwork was performed under this monitoring plan.

13. In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined the following:

> Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

Results of Community Consultation

Kama‘āina and *kūpuna* with knowledge of the proposed Project and study area participated in semi-structured interviews for this CIA. CSH attempted to contact 20 individuals for this CIA report, of which 10 responded and 5 participated in formal interviews, which occurred from November to December 2010. Some interviews were supplemented with detailed information from previous CSH interviews by the same participants for another project on Kewalo.

1. The two McKinley High School alumni celebrated the diversity of the school. State Senator Suzanne Chun Oakland thus describes the culture of McKinley High School:

> McKinley has always had a very diverse population of people, so we celebrated culturally. We had a May Day program during the day and in the evening. And we had all the students share their cultural practices,

> whether it was games, food, different kinds of dances, song. So, I don't know if there has been that kind of continuation. But I know that when I was there, I really wanted to celebrate the diversity of our cultures there. You had over 3,000 teachers because every student was a teacher for me, personally.

When thinking back to the late-1950s and early-1960s, Ms. Pi'ilani Kaopuiki similarly describes a community where there was an exchange of cultural foods and ideals. For Ms. Kaopuiki, the community has changed: "the warmth and welcome has gone: evaporated." Yet, Ms. Kaopuiki also notes that McKinley High School's lack of Hawaiian cultural significance as the primary trait of the school: "To me, the cultural significance of McKinley (High School) is that it doesn't have any Hawaiian culture in its physical plans now. It looks like wherever it came from…someplace in Europe."

2. Plants and agriculture of Kewalo were once an important part of the school curriculum and the culture. Senator Chun Oakland recalls a club at McKinley High School for Future Farmers of America and many other clubs, as well as a robust agricultural program before she became a student. While she was a student, these clubs and the agricultural programs "just did planting on the school site. My understanding before is that they used to go to the farms and be able to take care of the farms. That was part of the curriculum."

   Mr. Charles Kapua remembers various plants that were gathered from the *ahupua'a* (land division usually extending from the uplands to the sea) near the Project area, including banana stumps, *kōko'olau* plants, *kamani* leaves, and *wiliwili* berries.

   One unnamed participant gathered medicinal plants for *lā'au lapa'au*. These included *'uhaloa*, *pōpolo*, *māmaki*, *kī* and *laukahi*. The *'uhaloa* and *laukahi* were gathered on the McKinley High School campus. This anonymous participant identifies plants as part of Hawaiian sensibilities. She believes that, "the grounds could use some work…. I hope they keep the Hawaiian flavor too—and not be so sterile…. I think the plantings and grounds should blend with the style of these stately buildings."

   Ms. Kaopuiki similarly believes that native plants should be included in the new landscaping: "My hope is that they will incorporate native plantings. You're going to have plantings—then use native plantings because we have them available now."

3. As far as fishing in the area, Ms. Kaopuiki heard of net fishing and pole fishing near Ala Moana and the Kewalo Basin, fishing

from the shoreline and in boats. For Uncle Charles Kapua, his grandfather on his mother's side had a sampan boat that would go out to catch fish in Kewalo Basin. They would catch *aku, 'ōpelu, akule* and other fish. When asked if he remembered the names of the *aku* boats, he remembered the Yellowfin aku boat. The unnamed participant fished in the harbor and caught several kinds of reef fish, including 'aweoweo, *manini*, *opelu*, *'aholehole*, and *'ama'ama*, and squid (see Appendix B).

4. All participants spoke of a sense of place, in one way or another. However, this idea meant different things to each individual. For Ms. Kaopuiki:

   > A sense of place means that you recognize that we have trade winds, and try to use that in the design. That's the sense of place. I've been to some places that as soon as you get off the airplane, and you see the buildings, you know that you are in someplace different because their designs speak of where they are: Sāmoa. It's hard if you are in a city. But these people have an opportunity, especially since they're not going to build towers, where towers have to meet certain conditions, they can design so that there's a sense of being in Hawai'i.

   Senator Chun Oakland associates this sense of place with the architecture of the schools and the surrounding area: "What has been associated with McKinley [High School] are the beautiful grounds that we have. The historic buildings that we were able to preserve. So, I really hope that kind of ambiance is kept." Uncle Charles recommends building structures that match the existing architecture of the school.

5. While the McKinley Statute does not fall within the Project area, three of the five participants interviewed mentioned the inaccuracy of the McKinley Statue specifically. While the statue is a source of pride for one participant in this study, the three Native Hawaiians interviewed spoke of the inaccuracy of the depiction. Some viewed the "Treaty of Annexation," held in the statue's hand, as an attempt to misrepresent history. Ms. Kaopuiki explains that:

   > This school is named in honor of someone whose place in Hawaii's history is not one of pride. Wouldn't it be nice if it was decided that, because the school is an educational institution and should represent truth, that President McKinley doesn't deserve such honorable recognition—here in Hawai'i

	anyway. The name of the school should be changed and the statue removed. Mr. Kapanui also recalls that, "There was some controversy about the statue in front of the auditorium. That the document had something to do with—something that really wasn't what it was all about—something to do with the overthrow." Mr. Kapua, a U.S. veteran and a McKinley High School alumnus, recommends that the truth regarding the McKinley Statue be addressed: "If not now, then when?" The statue holds a document, and the words on the document are "Treaty of Annexation": Mr. Kapua believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. He does not believe this is a matter of rewriting history, but instead honestly portraying the truth of history. He also believes that a plaque is more respectful and less costly than taking down the statue and fixing it.
Recommendations	Based on the information gathered from archival documents, the companion archaeological inventory survey (Burke and Hammatt 2010), and the community consultation detailed in this CIA report, CSH recommends the following measures to mitigate potentially adverse effects on cultural, historical, and natural resources, practices, and beliefs: 1. In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined that, "previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka'ako area, which includes the Kewalo area." With this AISP determination in mind, CSH recommends that a cultural and archaeological monitor be present during all phases of construction. Personnel involved in excavation at McKinley High School during construction, should be mindful that burials may be uncovered. Personnel involved in development activities in the Project area should be informed of the possibility of inadvertent cultural finds, including human remains. Should cultural or burial sites be identified during ground disturbance, all work should immediately cease and the appropriate agencies notified pursuant to applicable law. 2. All participants in this study referred to the "sense of place," or similar concepts, as a guiding principle for this Project moving forward. With this in mind, participants asked that the School design buildings and landscapes that fit within Hawai'i's unique environment. Senator Chun Oakland associates this sense of place with the architecture of the schools and the surrounding area: "What has been associated with McKinley [High School] are the beautiful grounds that we have. The historic buildings that we

	were able to preserve. So, I really hope that kind of ambiance is kept." Mr. Kapua recommends building structures that match the architecture that exists at the school. Ms. Kaopuiki believes that, "the grounds could use some work…. I hope they keep the Hawaiian flavor too—and not be so sterile…. I think the plantings and grounds should blend with the style of these stately buildings." Ms. Kaopuiki similarly believes that native plants should be included in the new landscaping: "My hope is that they will incorporate native plantings. You're going to have plantings—then use native plantings because we have them available now." 3. While the McKinley Statue does not fall within the Project area, three of the five participants interviewed mentioned the inaccuracy of the McKinley Statue specifically. The McKinley Statue does indirectly impact the proposed construction on the campus, and it is not a cultural issue that is likely to subside. Mr. Kapua recommends that the truth regarding the McKinley Statue be addressed: "If not now, then when?" Mr. Kapua believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. CSH agrees that a plaque may be the least expensive and most direct means for addressing this issue. However, CSH also recommends that McKinley High School work with the Hawaiian community to determine the most amicable means of resolution.

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Section 1 Introduction

1.1 Project Background

At the request of Group 70 International, Inc., Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this Cultural Impact Assessment (CIA) for the proposed McKinley High School Athletic Complex, Honolulu (Kewalo) Ahupua‘a, Honolulu (Kona Moku) District, Island of O‘ahu, TMK: [1] 2-3-009:001 (por.). The Project area is a portion of the present McKinley High School campus, located north-east of Kapi‘olani Boulevard and between the Neal Blaisdell Exhibition Center on the west and Pensacola Street on the east. This area is depicted on the 1998 Honolulu U.S. Geological Survey 7.5-minute series topographic quadrangle (Figure 1) and on a modern aerial photograph (Figure 2).

The Master Plan for the proposed McKinley High School Athletic Complex includes the construction of a replacement track/football/soccer field, a 500–1,000 seat baseball field, a 500–1,000 seat softball field, a 50-meter swimming pool, six tennis courts, a new gym, a replacement enclosed rifle range, a new YMCA wellness center, locker rooms/shower facilities, and parking, and the renovation of an existing gym (Figure 3, Figure 4, and Figure 5). The softball stadium and the girl’s locker room and shower facility were included within the O’Hare et al. (2009) study area (blue area depicted in Figure 4). The entire Project area is approximately 22.1 acres, which includes the approximately 3.4-acre area (softball field and girl’s locker room and shower facility) that is covered under O’Hare et al. (2009).

In addition to the CIA, CSH also conducted an archaeological inventory survey plan for the Project area. The results of this archaeological study are presented in a companion report titled, “Archaeological Inventory Survey Plan (AISP) for the McKinley High School Athletic Complex, Honolulu (Kewalo) Ahupua‘a, Honolulu (Kona Moku) District, Island of O‘ahu, TMK: [1] 2-3-009:001 por,” (Burke and Hammatt 2010).

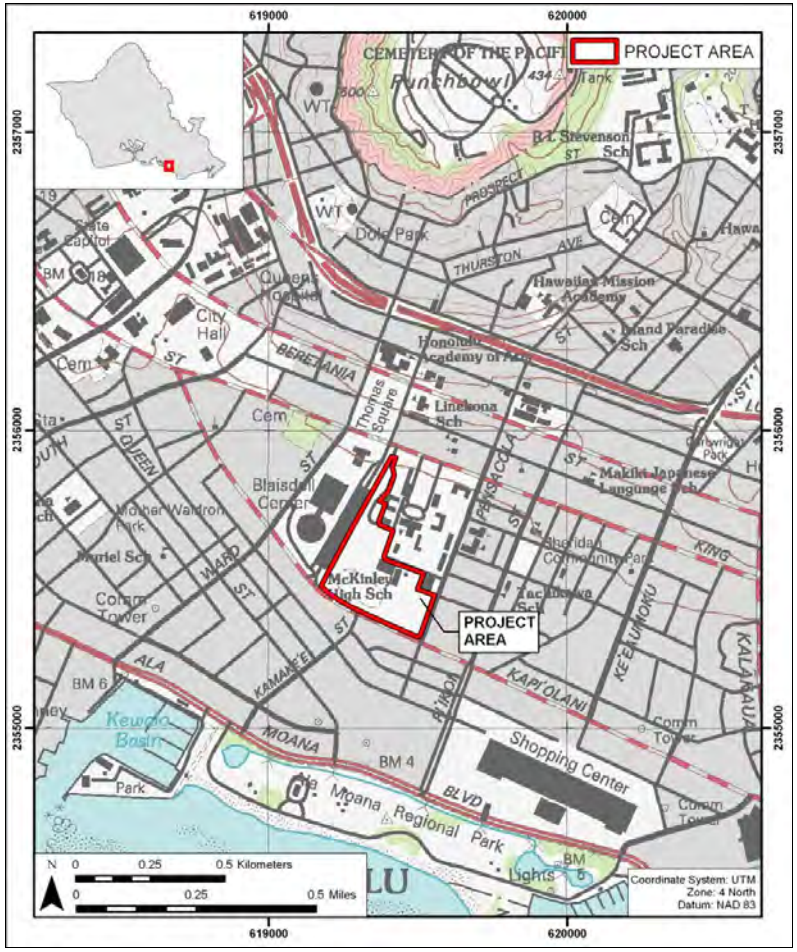

Figure 1. U.S. Geological Survey 7.5-minute topographic map (1998, Honolulu Quadrangle) showing location of project area

Figure 2. Aerial photograph of the McKinley High School campus with project area outlined (Google Earth 2008)

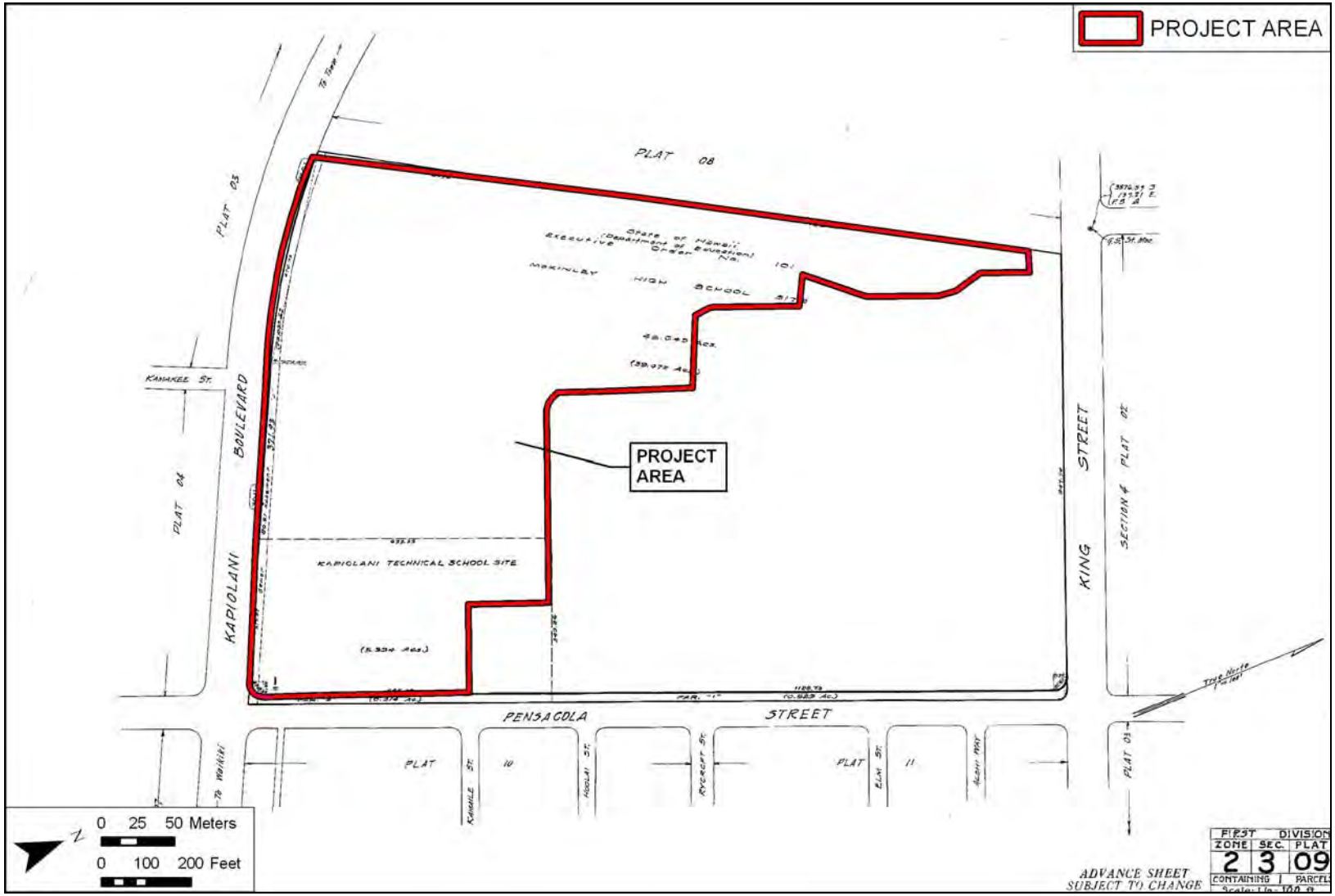

Figure 3. Tax Map [1] 2-3-009; Project area is in Parcel 001 (Hawai‘i Tax Map Key Service)

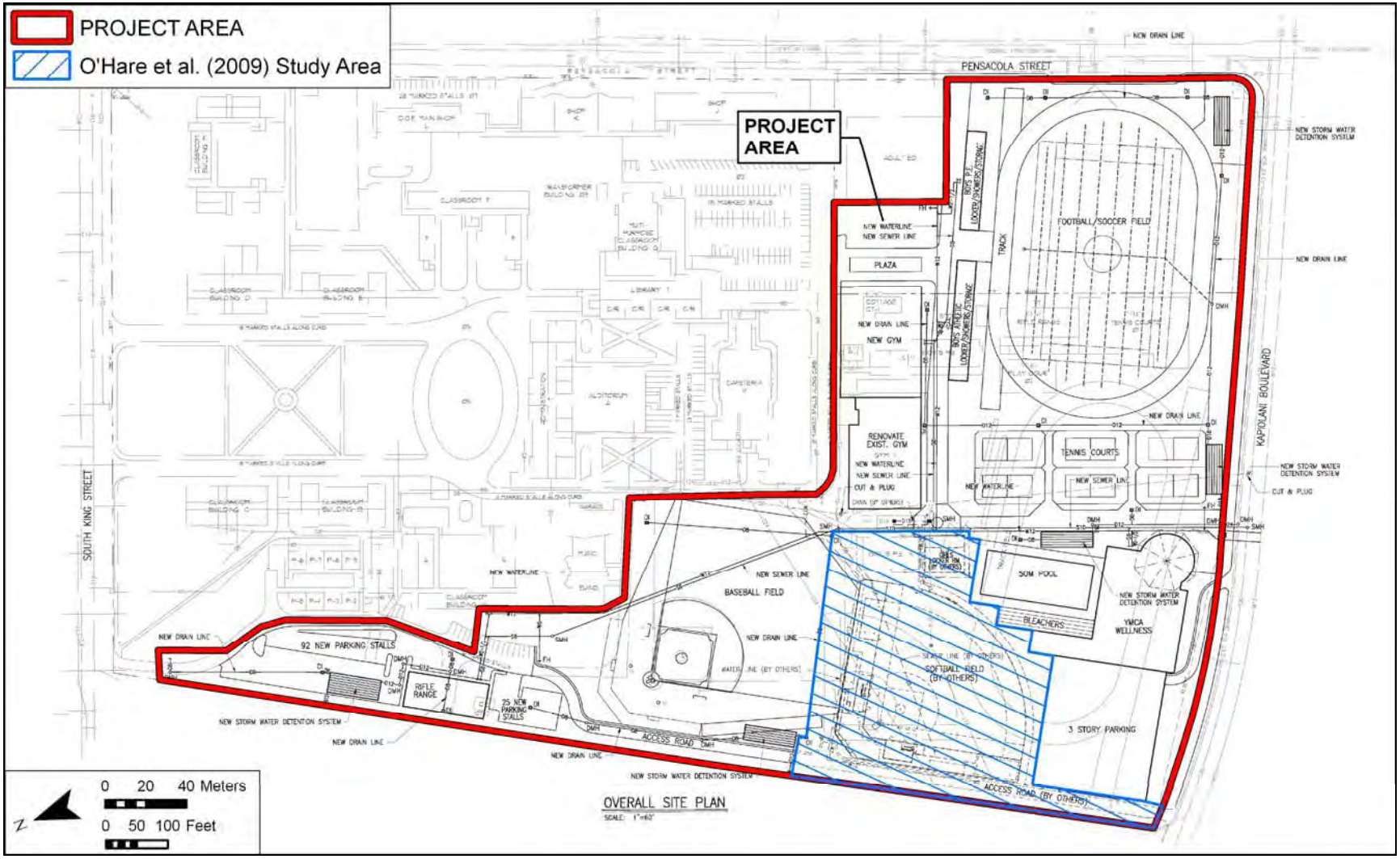

Figure 4. McKinley High School Athletic Complex Master Plan showing locations of proposed redevelopment (Group 70 International, Inc. 2010)

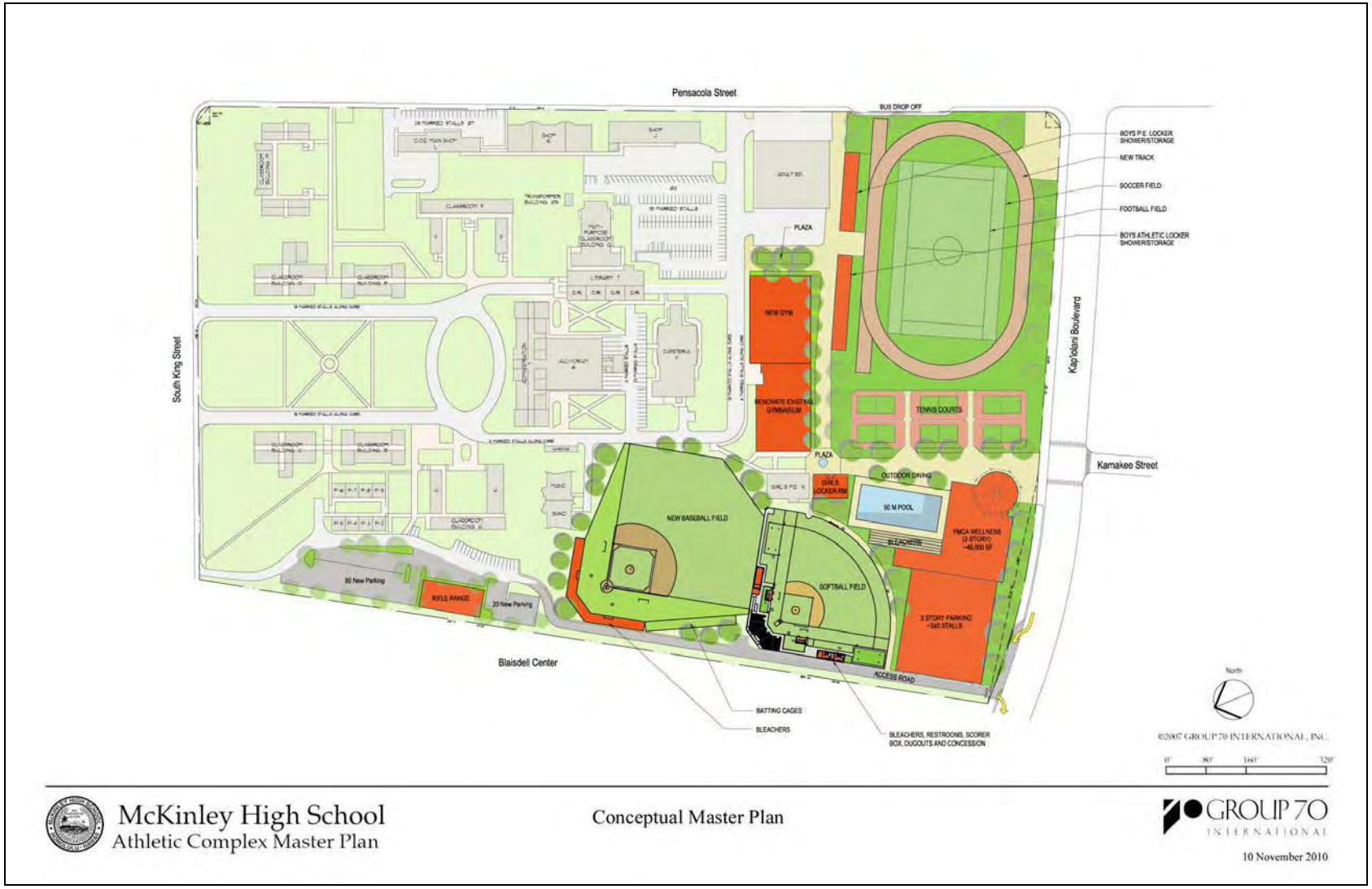

Figure 5. McKinley High School Athletic Complex Master Plan showing locations of proposed redevelopment (source: Group 70 International, Inc. 2010)

1.2 Document Purpose

The Project requires compliance with the State of Hawai‘i environmental review process (Hawai‘i Revised Statutes [HRS] Chapter 343), which includes consideration of a proposed Project’s effect on cultural practices. CSH conducted this CIA at the request of Group 70 International, Inc. Through document research and cultural consultation efforts, this report provides information pertinent to the assessment of the proposed Project’s impacts to cultural practices and resources (per the *Office of Environmental Quality Control’s Guidelines for Assessing Cultural Impacts*). The impacts may include Traditional Cultural Properties (TCPs) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places. In accordance with Hawai‘i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria in the Hawai‘i Administrative Rules (HAR) §13-275 under Criterion E, a historic property determined to be significant shall:

> Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

The document is intended to support the Project’s environmental review and may also serve to support the Project’s historic preservation review under HRS Chapter 6E and HAR Chapter 13-275.

1.3 Scope of Work

The scope of work for this CIA includes:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including the gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.4 Environmental Setting

1.4.1 Natural Environment

The Project area is within a topographic section of O‘ahu called the Honolulu Plain, an area generally less than 4.5 m, or 15 ft, above sea level (Davis 1989:5). The Honolulu Plain is

stratified with late-Pleistocene coral reef substrate overlaid with calcareous marine sand or terrigenous sediments, and stream-fed alluvial deposits (Armstrong 1983:36). The topsoil stratum consists of fill land, mixed (FL), containing areas filled with material dredged from the ocean and hauled from nearby areas (Foote et al. 1972).

The modern Hawaiian shoreline configuration is primarily the result of: (1) the rising sea level following the end of the Pleistocene (Stearns 1978; Macdonald et al. 1983); (2) the mid to late Holocene ca. 1.5–2.0 m high-stand of the sea (see summary in Dye and Athens 2000:18–19); and (3) pre-Contact and post-Contact human landscape modification. At the end of the Pleistocene, between approximately 20,000 and 56,000 years ago, water previously locked in glacial ice returned to the world’s oceans, and the sea level rose over 100 m to approximately its current level. In the vicinity of the current Project area, rising sea levels flooded the previously dry, earlier Pleistocene reef deposits, which had formed hundreds of thousands of years previously when sea levels were comparable to modern levels. When sea levels reached returned to modern levels, the now coastal regions became depositional environments where for tens of thousands of years previously, during the lower sea levels, they had been erosional environments.

A high stand of the sea for the Hawaiian Islands, ca. 1.5 to 2.0 m above present sea level, has been well documented from between 4,500 and 2,000 years ago (Stearns 1978; Athens and Ward 1991; Fletcher and Jones 1996; Grossman and Fletcher 1998; Grossman et al. 1998; Harney et al. 2000). During this high stand, there appears to have been an increase in coral reef production and the production of detrital reef sediments. Littoral environments appear to have been augmented substantially by the deposition of marine sediments. “What this means is that the great shoreline sand berms must have developed around the islands at this time because this was when calcareous sand was being produced and delivered to the shorelines in large quantities” (Dye and Athens 2000:19).

The Honolulu coastline was likely greatly affected by the deposition of marine sediments during this elevated sea level. The subsequent drop in sea level to its present level, ca. 2000 years ago, most likely created a slightly erosional regime that may have removed sediments deposited during the preceding period of deposition (Dye and Athens 2000:19). However, the net gain in sediments would have been substantial. In 1911, it was estimated that about one-third of the Honolulu Plain was a wetland (Nakamura 1979:65, citing a Hawaiian Territory Sanitary Commission report). Pre-contact Hawaiians used the lagoon/estuary environment of the Honolulu plain to construct fishponds. Fishpond walls served as sediment anchors for the accumulation of detrital reef sediments. They also likely affected long shore sedimentary transport, resulting in new littoral deposition and erosion patterns. In the post-western contact period, when the fishponds were no longer utilized, they became obvious locations for the deposition of fill. These reclaimed areas provided valuable new land near the heart of growing urban Honolulu.

The undeveloped natural condition of the Kaka‘ako/Kewalo area once consisted of low-lying marshes, tidal flats, fish ponds, reef areas, and limited areas of dry land. Beginning in the late nineteenth century, these low-lying areas were filled in and then developed, which permanently changed the area into its present fully-urbanized character. Foote et al. (1972) show the main portion of the athletic complex Project area as fill land, mixed (FL), as shown in Figure 6. The authors report that:

> This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources. (Foote et al 1972:31)

The northwestern portion of the athletic complex Project area is within Makiki Clay Loam, 0–2 percent slopes (MkA). The Makiki series consists of deep, well drained soils that formed in material weathered from alluvium mixed with ash and cinders. Makiki soils are located on alluvial fans and terraces (Foote et al. 1972:91).

While fill materials have been found in several portions of the Project area during previous archaeological investigations, Jaucas sand (JaC) was also discovered underneath some of the land surface. Foote et al. (1972:48) describe Jaucas sand as “single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile.”

In this area of the Honolulu District, rainfall averages less than 30 inches per year (Armstrong 1983:62). Northeasterly trade winds prevail throughout the year, although their frequency varies from more than 90% during the summer months to 50% in January; the average annual wind velocity is approximately 10 miles per hour (Wilson Okamoto 1998:2–1). Vegetation within the Project area is limited to a few ornamental trees in grass parking lot dividers and along the Project area margins.

1.4.2 Built Environment

The Project area is situated at the southern, *makai* (seaward), and western ends of the McKinley High School campus. The northern, *mauka* (inland), portion of the campus is covered with administrative and educational buildings. The Project area is mostly an open area covered with mown grass and a few trees. A dirt athletic track, tennis courts, a rifle range, and several buildings are also present within the Project area.

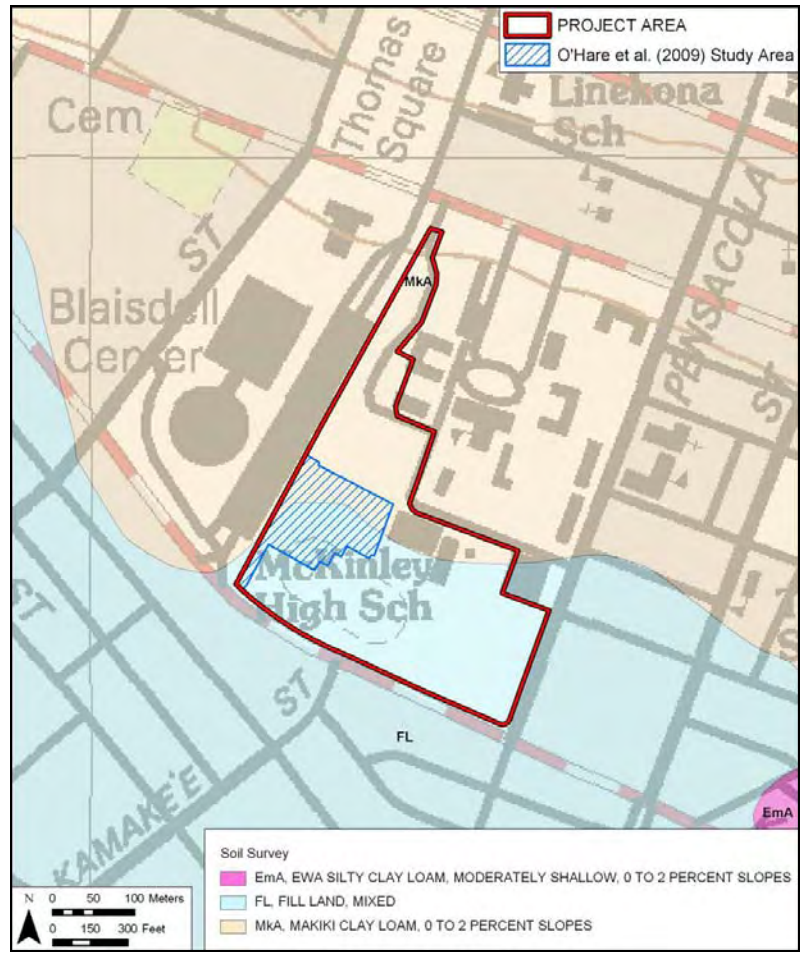

Figure 6. Soil information over U.S. Geological Survey topographic map (soil information from Foote et al. 1972)

Section 2 Methods

2.1 Archival Research

Historical documents, maps and existing archaeological information pertaining to the Project area were researched at the CSH library and other archives including the University of Hawai‘i at Mānoa’s Hamilton Library, the State Historic Preservation Division (SHPD) library, the Hawai‘i State Archives, the State Land Survey Division, and the archives of the Bishop Museum. Previous archaeological reports for the area were reviewed, as were historic maps and photographs and primary and secondary historical sources. Information on Land Commission Awards (LCAs) was accessed through Waihona ‘Aina Corporation’s Māhele Data Base (www.waihona.com) as well as a selection of CSH library references.

For cultural studies, research for the Traditional Background section centers on Hawaiian activities, including religious and ceremonial knowledge and practices, traditional subsistence land use and settlement patterns, gathering practices and agricultural pursuits, as well as Hawaiian place names and *mo‘olelo* (stories, history, oral traditions), *mele* (songs), *oli* (chants), *‘ōlelo no‘eau* (proverbs) and more. For the Historic Background section, research focuses on land transformation, development and population changes beginning in the early post–European Contact era to the present day (see Scope of Work above).

2.2 Community Consultation

2.2.1 Sampling and Recruitment

A combination of qualitative methods, including purposive, snowball, and expert (or judgment) sampling, were used to identify and invite potential participants to the study. These methods are used for intensive case studies, such as CIAs, to recruit people that are hard to identify, or are members of elite groups (Bernard 2006:190). Our purpose is not to establish a representative or random sample. It is to “identify specific groups of people who either possess characteristics or live in circumstances relevant to the social phenomenon being studied….This approach to sampling allows the researcher deliberately to include a wide range of types of informants and also to select key informants with access to important sources of knowledge” (Mays and Pope 1995:110).

We began with purposive sampling informed by referrals from known specialists and relevant agencies. For example, we contacted the SHPD, Office of Hawaiian Affairs (OHA), O‘ahu Island Burial Council (OIBC), and community and cultural organizations in the Honolulu (Kewalo) District for their brief response/review of the Project and to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the Project area and vicinity, cultural and lineal descendants of Kekaha, and other appropriate community representatives and members. Based on their in-depth knowledge and experiences, these key respondents then referred CSH to additional potential participants who were added to the pool of invited participants. This is snowball sampling, a chain referral method that entails asking a few key individuals (including agency and organization representatives) to provide their comments and referrals to other locally recognized experts or stakeholders who would be likely candidates for the study (Bernard 2006:192). CSH also employs expert or judgment sampling which

involves assembling a group of people with recognized experience and expertise in a specific area (Bernard 2006:189–191). CSH maintains a database that draws on over two decades of established relationships with community consultants: cultural practitioners and specialists, community representatives and cultural and lineal descendants. The names of new potential contacts were also provided by colleagues at CSH and from the researchers’ familiarity with people who live in or around the study area. Researchers often attend public forums (e.g., Neighborhood Board, Burial Council and Civic Club meetings) in (or near) the study area to scope for participants. Please refer to Table 12, Section 5, for a complete list of individuals and organizations contacted for this CIA.

CSH focuses on obtaining in-depth information with a high level of validity from a targeted group of relevant stakeholders and local experts. Our qualitative methods do not aim to survey an entire population or subgroup. A depth of understanding about complex issues cannot be gained through comprehensive surveying. Our qualitative methodologies do not include quantitative (statistical) analyses, yet they are recognized as rigorous and thorough. Bernard (2006:25) describes the qualitative methods as “a kind of measurement, an integral part of the complex whole that comprises scientific research.” Depending on the size and complexity of the project, CSH reports include in-depth contributions from about one-third of all participating respondents. Typically this means three to twelve interviews.

2.2.2 Informed Consent Protocol

An informed consent process was conducted as follows: (1) before beginning the interview the CSH researcher explained to the participant how the consent process works, the Project purpose, the intent of the study and how his/her information will be used; (2) the researcher gave him/her a copy of the Authorization and Release Form to read and sign (Appendix C); (3) if the person agreed to participate by way of signing the consent form or providing oral consent, the researcher started the interview; (4) the interviewee received a copy of the Authorization and Release Form for his/her records, while the original is stored at CSH; (5) after the interview was summarized at CSH (and possibly transcribed in full), the study participant was afforded an opportunity to review the interview notes (or transcription) and summary and to make any corrections, deletions or additions to the substance of their testimony/oral history interview; this was accomplished either via phone, post or email or through a follow-up visit with the participant; (6) the participant received the final approved interview and a copy of any photographs taken for the study. If the participant was interested in receiving a copy of the full transcript of the interview (if there is one as not all interviews are audio-recorded and transcribed), a copy was provided. Participants were also given information on how to view the report on the OEQC website and offered a hardcopy of the report once the report is a public document.

If an interviewee agreed to participate on the condition that his/her name is withheld, procedures are taken to maintain his/her confidentiality (see Protection of Sensitive Information below).

2.2.3 Interview Techniques

To assist in discussion of natural and cultural resources and cultural practices specific to the study area, CSH initiated semi-structured interviews (as described by Bernard 2006) asking

questions from the following broad categories: gathering practices and *mauka* and *makai* resources, burials, trails, historic properties and *wahi pana* (storied places). The interview protocol is tailored to the specific natural and cultural features of the landscape in the study area identified through archival research and community consultation. For example, in this study, Hawaiian habitat and agriculture, *wahipana* and *mo‘olelo*, marine and plant resources, burials, and historical representations are emphasized over other categories less salient to Project participants. These interviews and oral histories supplement and provide depth to consultations from government agencies and community organizations that may provide brief responses, reviews and/or referrals gathered via phone, email and occasionally face-to-face commentary.

2.2.3.1 In-depth Interviews and Oral Histories

Interviews were conducted initially at a place of the study participant’s choosing (usually at the participant’s home or at a public meeting place) and/or—whenever feasible—during site visits to the Project area. Generally, CSH’s preference is to interview a participant individually or in small groups (two–four); occasionally participants are interviewed in focus groups (six–eight). Following the consent protocol outlined above, interviews may be recorded on tape and in handwritten notes, and the participant photographed. The interview typically lasts one to four hours, and records the who, what, when and where of the interview. In addition to questions outlined above, the interviewee is asked to provide biographical information (e.g., connection to the study area, genealogy, professional and volunteer affiliations, etc.).

2.2.3.2 Field Interviews

Field interviews are conducted with individuals or in focus groups comprised of with *kūpuna* and *kama‘āina* who have a similar experience or background (e.g., the members of an area club, elders, fishermen, hula dancers) who are physically able and interested in visiting the Project area. In some cases, field visits are preceded with an off-site interview to gather basic biographical, affiliation and other information about the participant. Initially, CSH researchers usually visit the Project area to become familiar with the land and recognized (or potential) cultural places and historic properties in preparation for field interviews. All field activities are performed in a manner so as to minimize impact to the natural and cultural environment in the Project area. Where appropriate, Hawaiian protocol may be used before going on to the study area and may include the *ho‘okupu* (offering) of *pule* (blessing), and *oli*. All participants on field visits are asked to respect the integrity of natural and cultural features of the landscape and not remove any cultural artifacts or other resources from the area.

2.2.4 Protection of Sensitive Information

It is sometimes the case that participants in cultural studies agree to contribute their comments or be interviewed for a study on the condition that their names are withheld from the report. Their reasons for doing so vary from concerns about protecting the identity of resource collectors, and/or revealing the precise location of certain natural and cultural resources, to opposition to the proposed Project. For the interviewee who agrees to participate on the condition that his/her name is withheld from public disclosure, CSH takes all precautions to make sure his/her contribution remains confidential. The confidentiality of subjects is maintained via protected files.

2.3 Compensation and Contributions to Community

Many individuals and communities have generously worked with CSH over the years to identify and document the rich natural and cultural resources of these islands for cultural impact, ethno-historical and, more recently, TCP studies. CSH makes every effort to provide some form of compensation to individuals and communities who contribute to cultural studies. This is done in a variety of ways: individual interview participants are compensated for their time in the form of a small honorarium and/or other *makana* (gift); community organization representatives (who may not be allowed to receive a gift) are asked if they would like a donation to a Hawaiian charter school or nonprofit of their choice to be made anonymously or in the name of the individual or organization participating in the study; contributors are provided their transcripts, interview summaries, photographs and—when possible—a copy of the CIA report; CSH is working to identify a public repository for all cultural studies that will allow easy access to current and past reports; CSH staff do volunteer work for community initiatives that serve to preserve and protect historic and cultural resources (for example in, Lāna‘i and Kaho‘olawe). Generally our goal is to provide educational opportunities to students through internships, share our knowledge of historic preservation and cultural resources and the State and Federal laws that guide the historic preservation process, and through involvement in an ongoing working group of public and private stakeholders collaborating to improve and strengthen the Chapter 343 environmental review process.

Section 3 Traditional Background

3.1 Overview for Kaka‘ako

The Project area is within the Kaka‘ako Community Development District (*mauka* area), a modern district designated for planned development. However, the boundary of this modern development district is not the same as the ancient boundary of Kaka‘ako. The original location and extent of the area called Kaka‘ako is ambiguous. The ethnographer Henry Kekahuna (1958:4), who was born in Hawai‘i in 1891 and was a long-time resident of Honolulu, placed it “on the Ewa side of Kuloloia Stream where the Honolulu Iron Works and Fort Armstrong are now,” an area now covered by One Waterfront Plaza (between South and Punchbowl Streets). Kekahuna also related that “there were formerly scattered dunes of white sand there. Gilbert Islanders (Kilipaki) squatted there and made a living by fishing, collecting coral for curios, and catching octopus.” Only four 1850’s Land Commission Awards list their location as within the *‘ili* (small land division) of Kaka‘ako. These are also generally located adjacent to the sea, east of Punchbowl Street, between Pohukaina Street and Reed Lane.

3.2 Place Names

Place name translations presented without attribution in this subsection are from *Place Names of Hawai‘i* (Pukui et al. 1974), unless otherwise indicated. In addition, these names are bolded to draw attention to their placement on Covington’s 1881 map of O‘ahu (Figure 7).

On southwestern O‘ahu, *ahupua‘a* generally extend from the Ko‘olau mountain range to the seacoast. The *ahupua‘a* was divided further into smaller land divisions called *‘ili*. Covington’s map indicates that the Project area is within **Kewalo Ahupua‘a** and that the **Kewalo Ahupua‘a** is comprised of, on the east, **Kaka‘ako ‘Ili** and, on the west, **Kukuluāe‘o ‘Ili**. While modern districting refers to **Kewalo Ahupua‘a** as Kaka‘ako District, the size and placement of the letters on this 1881 map suggest that **Kewalo** is the larger land division, with **Kaka‘ako ‘Ili** and **Kukuluāe‘o ‘Ili** inside this *ahupua‘a*. Moreover, **Kewalo** is not a continuous *ahupua‘a*. As the Hawaiian Government Surveys office explained in 1850: “Kewalo … had its seacoast adjoining Waikīkī, its continuous kula on the plain, and one-half of Punchbowl Hill and its kalo land in Pauoa valley” (see Section 4.2.1).

Kewalo literally means “the calling (as an echo).” Land Commission Awards and other documents identify it as the area between Cooke and Sheridan Streets, *mauka* of Queen Street. According to Pukui et al. (1974:109), “outcasts (*kauwā*) intended for sacrifice were drowned here” (see Section 3.3.1 below). Kekahuna (1958:4) said that at one time, Kewalo also had an area of sand beach, where various sports, such as surfing, were performed. According to Pukui et al. (1974:145), the Honolulu land section of Pāwa‘a is east of the Project area, near the intersection of King Street and Kalākaua Avenue. Thus, **Kewalo Ahupua‘a** extends beyond Ke‘eaumoku Street.

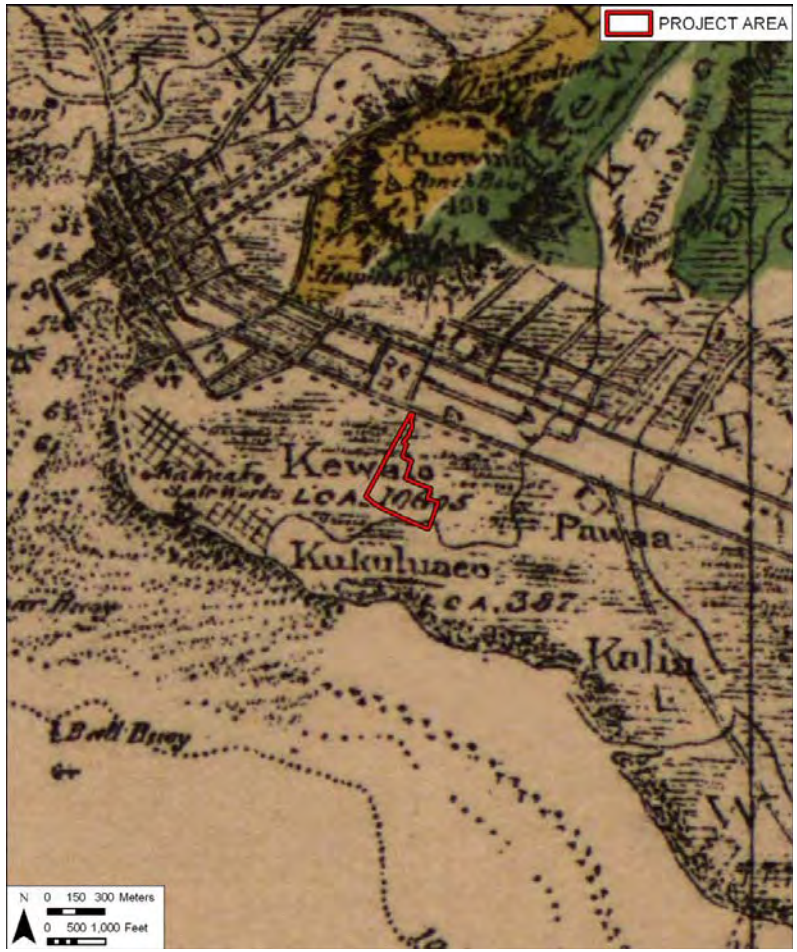

Figure 7. Portion of 1881 map of O‘ahu by R. Covington, placing the Project area in the *Ahupua‘a* of Kewalo (Hawai‘i Land Survey Division, Registered Map No. 1381)

Kaka‘ako is not translated in the definitive work, *Hawai‘i Place Name*s by Pukui et al. (1974), but the Hawaiian word *kākā‘āko* is translated as “dull, slow” in the *Hawaiian Dictionary* (Pukui and Elbert 1986:110). It is possible that this place name refers to the abundant standing water characteristic of this once marshy place. Thrum (1922:639) translated the word as “prepare the thatching” (*kākā* = to chop, beat, or thresh; *ako* = thatch). If Thrum’s translation is correct, it could be related to the fact that salt marshes, such as areas like Kaka‘ako, were excellent places to gather tall *pili* grass, which the Hawaiians traditionally used to thatch their houses (see Section 3.3.1 below for Kewalo legend).

Kukuluāe‘o, translates literally as the “Hawaiian stilt (bird),” *Himantopus himantopus*, and from the word *kukuluāe‘o,* which means “to walk on stilts.” Pukui et al. (1974:123) describe the area as “formerly fronting Kewalo Basin” and “containing marshes, salt ponds, and small fishponds,” an environment well suited for this type of bird (Griffin et al. 1987:36). The ethnographer Henry Kekahuna (1958:4) described **Kukuluāe‘o** as an area where salt was formerly made.

3.3 *Wahi Pana*

Of the three place names mentioned above (Kewalo, Kaka’ako, and Kukulāe‘o), Kewalo appears most in Hawaiian *mo‘olelo*. The name Kukuluāe‘o does not appear in any legends in the *Hawaiian Island Legends Index* (Gotanda 1989) or in the index to *Fornander’s Collection of Hawaiian Antiquities and Folklore*, *Volumes IV, V, and VI* (Fornander 1916–1920). However, Pu‘ukea Heiau, within Kukuluāe‘o ‘Ili, appears in several sources. Kaka‘ako is mentioned once in ancient *mo‘olelo*. Kaka‘ako and Kukuluāe‘o are mentioned in some post-Contact chants.

3.3.1 Kewalo

Kewalo once had a freshwater spring located in its central portion (current location unknown), as recorded in the proverb “*Ka wai huahua‘i o Kewalo*,” which translates as “the bubbling water of Kewalo.” Two springs are mentioned in a traditional story of the Waters of Ha‘o. This legend tells of two children of the chief Ha‘o who ran away from their cruel stepmother. They stayed for a time with the caretakers of Kewalo Spring, which may have been located close to the trail that connected Waikīkī and Honolulu. The children left when they heard that the chiefess had sent men to look for them. The two children followed the moonlit trail across the plain toward Kou (Honolulu), but finally collapsed from weariness and thirst. In a dream, the boy’s mother told him to pull up a plant close to his feet. When he did, he found a spring under the plant, which was called the Water of Ha‘o, or Kawaiaha‘o. This spring is located at the western end of the trail, near Kawaiaha‘o Church (Pukui and Curtis 1988:87–89).

The Kewalo area once had a famous fishpond that was used to drown *kauwā* or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaihehe‘e* (Kamakau 1991:6), or *Ke-kai-he‘ehe‘e*, which translates as “sea sliding along,” suggesting that the victims were slid under the sea (Westervelt 1991:16). Kewalo is described as:

> A fishpond and surrounding land on the plains below King Street, and beyond Koula [Kō‘ula]. It contains a spring rather famous in the times previous to the conversion to Christianity, as the place where victims designed for the Heiau of Kanelaau on Punchbowl slopes, was [Sic.] first drowned. The priest holding the

> victim’s head under water would say to her or him on any signs of struggling, “Moe malie i ke kai o ko haku.” “Lie still in the waters of your superiors.” From this it was called Kawailumalumai, “Drowning waters.” (Sterling and Summers 1978:292)

Since Kō‘ula (meaning “red sugar cane”) appears to refer to the area near Kō‘ula Street, on the west side of Ward Avenue, the description suggests (“beyond Koula”) that the Kawailumalumai Pond may have been near what was once the Ward Estate (now Neal Blaisdell Center).

Kewalo is mentioned in a legend as a marsh near the beach, where tall *pili* grass was growing. A man named Kapoi went to this area to get thatching for his house. While there, Kapoi found seven owl eggs and took them home to cook for his supper. An owl perched on the fence surrounding his house and cried out “O Kapoi, give me my eggs!” After several such pleas, Kapoi returned the eggs. In return, the owl became his ‘*aumakua* (family god) and instructed him to build a *heiau* (pre-Christian place of worship) named Mānoa. Kapoi built the *heiau,* placed some bananas on the altar as a sacrifice, and set the *kapu* days for its dedication. The king of O‘ahu, Kākuhihewa, who was building his own *heiau* in Waikīkī, had made a law that if any man among his people erected a *heiau* and set the *kapu* before him, that man should die. Kapoi was seized and taken to the *heiau* of Kūpalaha, at Waikīkī. Kapoi’s ‘*aumakua* owl asked for aid from the king of the owls at Owl’s Hill (Pu‘u Pueo) in Mānoa, who gathered all of the owls of the islands. They flew to Kūpalaha and battled the king’s men, who finally surrendered. From this time, the owl was considered a powerful *akua* (god). The battle area was known as Kukaeunahio-ka-pueo, which means “the confused noise of owls rising in masses” (Thrum 1998:200–202; Westervelt 1991:135–137).

Kewalo was the birthplace of the great chief Hua-nui-ka-la-la‘ila‘i, as mentioned in this *oli* (chant) recounted by Kamakau (1991:24):

‘O Hua-a-Kamapau ke ‘li‘i	Hua-a-Kamapau the chief
O Honolulu o Waikīkī	O Honolulu, of Waikīkī
I hanau no la i kahua la i Kewalo,	Was born at Kewalo,
‘O Kālia la kahua	Kālia was the place [the site]
O Makiki la ke ēwe,	At Makiki the placenta,
I Kānelā‘au i Kahehuna ke piko,	At Kānelā‘au at Kahehuna the navel cord,
I Kalo i Pauoa ka ‘a‘a;	At Kalo at Pauoa the caul;
I uka i Kaho‘iwai i	Upland at Kaho‘iwai, at
Kanaloaho‘okau . . .	Kanaloaho‘okau . . .

3.3.2 Kaka‘ako

Kaka‘ako is mentioned in Moke Manu’s (1998:230–249) version of the legend of Kū‘ula, the god presiding over the fish, and his son ‘Ai‘ai, who was the first to teach the Hawaiians how to make various fishing lines and nets, the first to set up a *ko‘a kū‘ula*, a rock shrine on which the fishermen would place their first catch as an offering to Kū‘ula, and the first to set up *ko‘a ia*, fishing stations where certain fish were known to gather. Leaving his birthplace on Maui, ‘Ai‘ai traveled around the islands, establishing *ko‘a kū‘ula* and *ko‘a ia*. On O‘ahu, he landed first at Ka‘ena Point, then traveled around the island.

> Aiai came to Kalia [Waikīkī] and so on to Kakaako. Here he was befriended by a man named Apua, with whom he remained several days, observing and listening

> to the murmurs of the chief named Kou. This chief was a skillful haiku [perhaps bonito] fisherman, his grounds being outside of Mamala until you came to Moanalua. There was none so skilled as he, and generous withal, giving aku [bonito] to the people throughout the district.
>
> As Aiai was dwelling with his friend Apua at Kakaako, he meandered off one day along the shore of Kulolia [Kuloloia] and so on to Pakaka and Kapapoko. (Manu 1998:242)

This story mentions several place names near the Kaka‘ako area, including the Kuloloia shore, Pākākā, an ‘*ili* or *heiau* at Honolulu Harbor, and Kapapoko, an eating house near the harbor used by Ka‘ahumanu, wife of Kamehameha I (‘Ī‘ī 1959:66). In Hawaiian legends, the names of people often point to the place where they resided. Thus, the friend Apua may have lived at ‘Āpua, a small ‘*ili* near the western boundary of the Kaka‘ako area.

3.3.3 Kukuluāe‘o and Pu‘ukea Heiau

The chief Hua, born in Kewalo, was famous for his love of cultivation and his care for the people. His *heiau,* called Pu‘ukea, was in Kukuluāe‘o in Honolulu; it is mentioned in a traditional *wānana* (prophecy) recorded by Kamakau (1991:24–25):

[*Ka makaua ua kahi o ‘Ewa*]	[The increasing “first rain” of ‘Ewa]
Ua puni ka i‘a o Mokumoa,	Overcomes the fish of Mokumoa,
Ua kau i‘a ka nene;	Washes up fish to the nene plants;
Ua ha‘a kalo ha‘a nu;	Lays low the taro as it patters down;
Ha‘a ka i‘a o kewalo,	Lays low the fish of Kewalo,
Ha‘a na ‘ualu o Pahua,	Lays low the sweet potatoes of Pahua,
Ha‘a ka mahiki i Pu‘ukea,	Lays low the mahiki grass at Pu‘ukea,
Ha‘a ka unuunu i Pele‘ula,	Lays low the growing things at Pele‘ula
Ha‘a Makaaho i ke ala.	Lays low Makaaho [Makāho] in its path
E Kū e, ma ke kaha ka ua, e Kū,	O Kū, the rain goes along the edge [of the island], O Kū
[*I ‘ai ‘na ka i‘a o Maunalua*] . . .	[Eating” the fish of Maunalua] . . .

The chant mentions the *mahiki* grass of Pu‘ukea Heiau. The Hawaiian term *mahiki* means “to peel off” (Andrews 2003:369). The word was also used to describe a rite to exorcise an evil spirit, as the skilled *kahuna* (priest) “peeled” the malicious spirit from the afflicted. A shrimp called *mahiki* or a native grass called *mahiki* was used in the ritual. *Mahiki*, or ‘*aki‘aki*, is a tufted rush (*Sporobolos* sp.) found near the seashore. The ethnologist, Mary Pukui, states that even during her youth, parents put “*tī* leaves, or *hala*, or *‘aki‘aki* grass, in a little sea-salt water and [would] have the child drink it” to rid them of badly-behaving spirits (Pukui et al. 1972:163). The use of this grass in a ritual may explain its association with a ceremonial *heiau*, or it may simply be that the Kukuluāe‘o coast was a good habitat and thus a favored place for healers to collect this type of grass.

The literal meaning of Pu‘ukea is “white hill” (although it may have alternate meanings). Pu‘ukea is also the name of a small land division within the ‘*ili* of Kukuluāe‘o, mentioned in at least two Land Commission Awards (LCA 1502 and 1504). LCA 1504 was located near the junction of Halekauwila and Cooke Streets. It is fairly common for a *heiau* to have the same

name as the ‘*ili* it is located within, so it is possible that Pu‘ukea Heiau was also near the junction of Halekauwila and Cooke streets. The majority of the house sites in the mid-nineteenth century in Kukuluāe‘o were located near Halekauwila and Queen Streets, *mauka* of the low-lying coastal swamplands on higher, dry ground. It is possible that the *heiau* platform, or the area that it was built on, was one of the few “high spots” in the flat, low-lying swamp that surrounded it, and thus gained the name *pu‘u kea* (white hill).

Thomas Thrum (1906:37–47), who made several lists and surveys of *heiau*, does not mention Pu‘ukea Heiau. In his report on O‘ahu sites in the early 1930s, McAllister (1933:80) says of Honolulu: “Information regarding former sites within the present limits of Honolulu must come entirely from literary sources.” He does mention Pākākā Heiau, once the main royal temple in Honolulu. This *heiau* would have been located around the foot (*makai end*) of Fort Street. He does not list Pu‘ukea Heiau, which Kamakau placed in Kukuluāe‘o, but he does note that Peter Corney, a visitor to the island in 1819, saw several *heiau* (*morai*) along the Honolulu shore:

> There are several morais, or churches in the village, and at new moon the priests, chiefs and hikanees (aikane) [friends] enter them with offerings of hogs, plantains, and cocoanuts, which they set before the wooden images. The place is fenced in, and have [sic] pieces of white flags flying on the fences. (Corney 1896:101)

The *heiau* of Pu‘ukea and an area called Kaka‘ako are mentioned in the chant “The Battle of Nu‘uanu,” which concerns the 1795 invasion and conquer of O‘ahu by Kamehameha I. One section of the chant describes locations in Honolulu, possibly listing them from east to west:

75	*Lauwili i Pūkē (Pu‘ukea) i Ka-imu-hai-kanaka*,
76	*I Kai-kua, i Kakaako, i Mamala*,
77	*I ke kai o Kuloloia, Pakaka*,
78	*I ka-imu-hai-kanaka, i ka-wai-apuka-Kāne*. (Kala‘ikuahulu 1880:131)

3.3.4 Summary of *Wahi Pana*

From the *mo‘olelo*, one can see that Kewalo, with the *‘ili* of Kaka‘ako and Kukuluāe‘o, was noted for its fishponds and salt pans, for the marsh lands where *pili* grass and other plants could be collected, for ceremonial sites such as Pu‘ukea Heiau and Kewalo Spring, for Kawailumalumai Pond, where sacrifices were made, and for the trails that allowed transport between the more populated areas between Waikīkī and Honolulu. Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources. Some commoners perhaps lived in the area, adjacent to the ponds and trails.

3.4 Archaeological Background

Most traditional Hawaiian surface structures had been demolished in the Kaka‘ako area by the time of the first scientific archaeological surveys (e.g., Griffin 1987). McAllister (1933:80), in his report on the survey of O‘ahu sites conducted in the early 1930s, writes of Honolulu, “Information regarding former sites within the present limits of Honolulu must come entirely from literary sources.” He does mention Pākākā Heiau, once the main royal temple in Honolulu; this *heiau* would have been located around the foot (*makai* end) of Fort Street. Nor does he list Pu‘ukea Heiau (discussed in Section 3.3.3), which Kamakau (1991:24–25) placed in

Kukuluāe‘o. However, McAllister does note that Peter Corney (1896:101), a visitor to the island in 1819, saw several *heiau* (*morai*) along the Honolulu shore. Archaeological investigations have been conducted in parcels adjacent to the Project area and on road alignments near the Project area; the findings are summarized in Table 1, and the locations are illustrated in Figure 8. Below is a summary of the significant archaeological work conducted in the vicinity of the Project area.

3.4.1 Area West of Ward Avenue

In 2006, CSH conducted an archaeological inventory survey in an area between King Street and Ward Avenue, adjacent to the Roman Catholic Cemetery and a HECO building (Perzinski et al. 2006). The survey consisted of the excavation of six trenches and nine pile caps. The stratigraphic sequence consisted generally of fill from 0–50 cmbs. Black cinder was generally encountered near the interface of the water table and a sand/cinder mixed layer (at approximately 1.7 m below the surface). Below the cinder was the coral limestone bedrock of the Honolulu plain deposited during a prior high stand of the sea.

No discrete pre-Contact cultural layers were encountered, though a mixed historic layer was observed below the fill layers. The layers had a sparse mixture of historic trash and very little shell midden, and they are believed to be part of the historic land filling. No charcoal was observed in any of the trenches suggesting a lack of pre-Contact habitation within the premises of the Project area. During the inventory survey, one previously identified site (SIHP# -5455; two human burials) was documented within the project area. The burials consisted of two historic coffin burials believed to be associated with the adjacent Roman Catholic Cemetery. The burials were located outside of the presently delineated cemetery property; however, based on their position, orientation, and coffin interment, it is suggested that the cemetery once encompassed this portion of the project area.

3.4.2 King Street

In 2004, Pacific Legacy, Inc. conducted an archaeological assessment of King Street as part of an environmental assessment (Le Suer and Cleghorn 2004). The aim of the archaeological assessment was to determine the potential for archaeological resources to be located in the vicinity of the project area. No fieldwork was involved in this assessment. Through archival research, it was determined that there were three areas that could contain archaeological features: the area surrounding the Catholic Cemetery on King Street and two traditional fishponds.

3.4.3 Area between Kamake‘e Street and Ward Avenue

In 2005, Scientific Consulting Services conducted an archaeological inventory survey on two parcels in Kaka‘ako near the corner of Ward Avenue and Kapi‘olani Boulevard (Monahan 2005). Nine backhoe trenches were excavated. While archaeological monitoring was recommended for any future subsurface activity, no burials or significant artifacts were encountered.

In 2005, CSH conducted an archaeological inventory survey of the 4-acre Moana Vista project area between Kapi‘olani Boulevard and Waimanu Street (O’Leary and Hammatt 2006). Although 24 backhoe trenches were excavated, no finds, either pre-Contact or historic, were found. A large percentage of the project area had been previously disturbed and excavated; the remaining area had some Jaucas sand below fill, but no cultural material was found in this stratum.

Table 1. Previous Archaeological Work Within and Adjacent to the Current Project Area

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
Smith 1989	Kapi‘olani Blvd.	Inadvertent discovery of 1 human burial
Anderson 1995, 1997a and b	King Street and Archer Lane	Inventory survey, monitoring, and burial disinterment; minimum of 30 historic burials from the Roman Catholic Church Cemetery (Site **-5455**), one burial disinterred; some historic refuse pits (Site **-5373**) recorded along western side of the cemetery
Allen 1997	Symphony Park, Ward Ave.	Paleo-environmental investigations identified a wetland (four wetland strata, Layers II–V) below a modern fill layer (Layer I). The lowest layers represented the changes that occurred as the local area changed from a marine bay to a lagoon and eventually to a marsh
Winieski & Hammatt 2000a	Kaka‘ako ID-3 and other parcels	Old "A" horizon noted throughout Project area; 20 human burials recorded, 17 of which were recovered (Sites **-4380** and **-5820**)
Winieski and Hammatt 2000b	Kaka‘ako ID-4, Kamake‘e St.	Two adjacent coffin burials recorded (Site **-4498**); old "A" horizon noted in trenches from Queen to Waimanu Streets
Souza et al. 2002	Kaka‘ako ID-7, Kamake‘e St.	Three disturbed pre-Contact burials recorded (Sites **-6376, -6377, -6378**); old "A" horizon found in 7 of 10 profiles
O‘Hare et al. 2003	Block on corner of Kapi‘olani Blvd. and Pi‘ikoi St.	24 trenches excavated in a lot on the east side of Pi‘ikoi St. Two sites identified: several historical trash pits (Site **-6637**) with material dating to the 1920s to 1940s and a wetland stratum with a defined sand berm (Site **-6636**), which can be seen on late nineteenth century maps
Tulchin and Hammatt 2004	Kapi‘olani Area Revised Sewer System project (9 subareas)	Literature review indicated a high probability for encountering human skeletal remains in the lot. No surface archaeological or historical features were observed during the field check

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
O’Hare et al. 2004; Tulchin and Hammatt 2005	Ko‘olani Condominium	Original wetland surface of Kewalo (Site **-6636**) and 3 historic trash pits (Sites **-6639, -6641**) reported during inventory survey; wetland sediments (Site **-6636**) and historic deposits (Site **-6641**) noted in addendum report
O’Leary and Hammatt 2004	Unit 9 Streets	No cultural remains found during monitoring
Le Suer and Cleghorn 2004	East O‘ahu Transmission Project; King St.	Archaeological assessment; no fieldwork
Clark and Gosser 2005; Gosser et al. 2006	Kamake‘e St. and Kapi‘olani Blvd.	Subsurface archaeological inventory survey and monitoring. No finds during AIS other than a previously described wetland area (Site **-6636**). Buried “A” horizon found during monitoring
Monahan 2005	Kapi‘olani Blvd. *makai* of the Blaisdell Ctr.	Archaeological assessment report of three parcels measuring 1.35 acres in Kewalo; no surface features were found
Esh and Hammatt 2006	Pi‘ikoi St. from Ala Moana Blvd. to Matlock St.	Monitoring of Unit 5B Streets; no cultural materials found
Hammatt 2006a	Kapi‘olani Blvd.	Field inspection; no surface historic properties were observed
Hammatt 2006b	Ala Moana Center	Archaeological inventory survey; one feature, a wooden box containing historic artifacts (Site **-6847**)
Perzinski et al. 2006	Kewalo HECO Dispatch Center	6 trenches and 9 pile caps excavated; 2 human burials recorded (Site **-5455**)
Bell et al. 2006; Thurman et al. 2007	Victoria Ward Village Shops	Six burials (Site **-6854**) found during an inventory survey and an additional 50+ burials found during an on-going monitoring project. Historic privy/activity area (Site **-6855**) and fishpond sediments (Kolowalu Pond; Site **-6856**) recorded

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
Bush and Hammatt 2006	Auahi Street	No archaeological finds were made during monitoring for electrical trenching
O’Hare et al. 2006	Kaka‘ako ID 10	Cluster of 28 historic burials (Site **-6658**), 2 isolated disturbed burials (Site **-6659**), and a historic trash dump (Site **-6660**) recorded; weak "A" horizon noted; some fishpond sediments
O’Leary & Hammatt 2006	Moana Vista, Kapi‘olani Blvd.	Inventory survey; no findings
Barnes & Shideler 2007	Kona & Waimanu Sts.	No surface features found during a field inspection. Background research indicated the possibility of subsurface burials
O’Hare et al. 2007	Alapai Transit Center	28 trenches excavated; 4 trash pits (Site **-6901**) and 3 burials (Site **-6902**) discovered
Hammatt 2008	Ko‘olani Condominium	Two isolated burials (Sites **-6910, -6912**) and a cluster of 16 coffin burials (Site **-6911**) found during monitoring project
Thurman et al. 2009	Queen Street Parks Project	One previously recorded historic property encountered during subsurface investigation: Site **-6856**, a historic fishpond remnant
Fong et al. 2009	Rehabilitation of Streets: Unit 9, Phase 1	No human remains or historic properties recorded
Pammer et al. 2009	Alapai Transit Center	15 test trenches excavated; 3 additional historic trash pits observed (Site **-6901**)
Pammer and Hammatt 2010	Moana Vista Project Area, Kapi‘olani Blvd.	Archaeological assessment; no historic properties or features observed

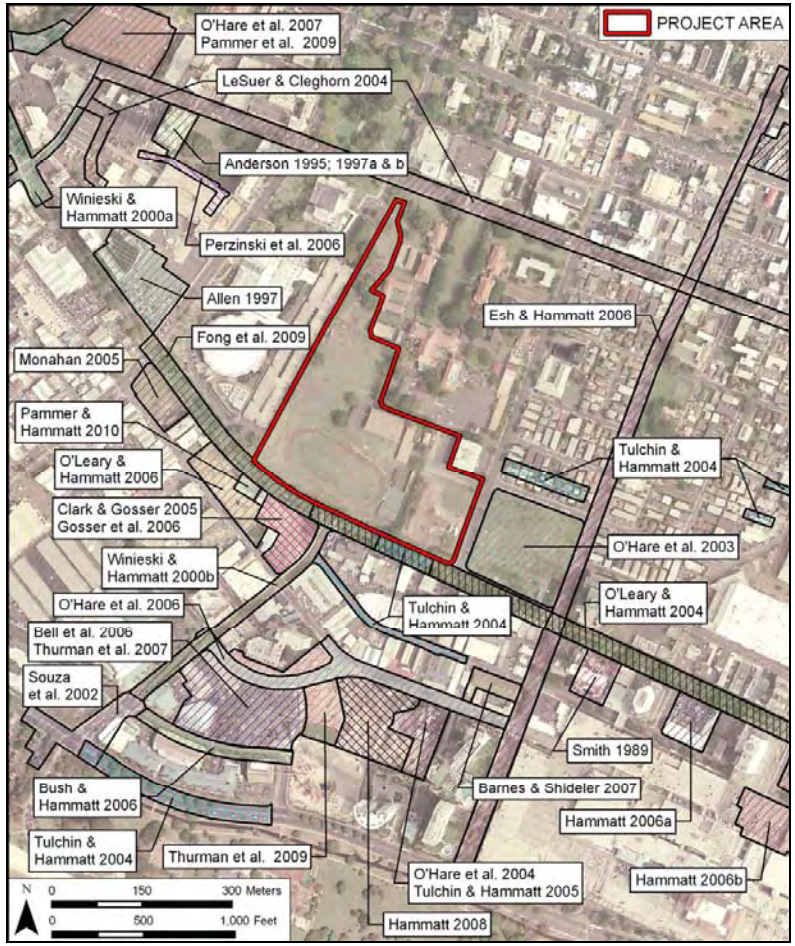

Figure 8. Locations of previous archaeological work near the Project area (base map: 2005 U.S. Geological Survey Orthoimagery)

In 2005, Pacific Consulting Services, Inc. conducted a subsurface archaeological inventory survey of a project area on the southwest corner of Kapi‘olani Boulevard and Kamake‘e Street (Clark and Gosser 2005). Despite the excavation of 45 trenches, no historic or pre-Contact findings were reported, with the exception of a previously described remnant of a small pond (SIHP# 50-80-14-6636). In 2006, Pacific Consulting conducted monitoring at this same site (Gosser et al. 2006). During monitoring, a previously identified, buried “A” horizon was observed in the southern portion of the project area.

In April 2010, CSH conducted an archaeological assessment for the Moana Vista Project on Kapi‘olani Boulevard (Pammer and Hammatt 2010). Four trenches were excavated in order to document potential subsurface cultural deposits and stratigraphy. No historic properties or features were observed. The stratigraphic sequence across the project area included large amounts of fill. The fill material ranged from terrestrial mixed soils to primarily crushed coral fill and marine pumped dredge material. Underlying the fill layers was a natural peat material, overlying natural marine clay, which was directly overlying the coral shelf. The stratigraphy indicated there was a relatively low possibility of encountering historic properties throughout the majority of the project area.

3.4.4 Area between Kamake‘e and Pi‘ikoi Streets

In 2005, archaeological monitoring was conducted for Hawaiian Electric Company’s trenching of the Hokua Tower project on Auahi Street (Bush and Hammatt 2006); the project included a portion of the Hokua Towers lot. No archaeological finds were encountered during monitoring.

In 2007, CSH conducted a field inspection of a 0.74-acre lot for the proposed 1235 Kona Street/1226 Waimanu Street Reserved Housing Project (Barnes and Shideler 2007). Field inspection was limited to visual inspection from the adjacent sidewalks along Waimanu and Kona Streets. Most of the project area was in light industrial-use warehouses. The entire project area was covered with structures, cement, or asphalt. This study noted many burial finds within a kilometer of the project area. Many of the previous burial finds in the vicinity were suggested possibly to be associated with a former geographic feature (a higher sand dune on the seaward side of Kolowalu Pond) to the west, and thus burial densities in the vicinity of the present Project area (which appears to have been more marshy) could be expected to be lower. The likelihood of burial finds in that project area was thus evaluated to be less than for several other areas of Kaka‘ako.

3.4.5 McKinley High School Area

In 2009, CSH completed an archaeological monitoring plan for a portion of the McKinley High School Athletic Complex Master Plan Project (O’Hare et al. 2009). This area included the softball stadium and the girl’s locker room and shower facility. The monitoring plan specified that an archaeological monitor would be on-site during all ground-related disturbance activity below 18 in (0.45 m), due to the cultural sensitivity of the area and the number of burial finds already encountered in the vicinity of the project area. No fieldwork was performed under this monitoring plan.

In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined the following:

> Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

3.4.6 Pi‘ikoi Street and Kapi‘olani Boulevard Area

In 2003, CSH completed an archaeological inventory survey of an approximately 6-acre parcel lying between Kapi‘olani Boulevard and Pi‘ikoi, Kamaile, and Pensacola Streets (O‘Hare et al. 2003). No burials were found in the 24 trenches excavated during the inventory survey, but historic trash pits (SIHP# 50-80-14-6637) and a newly defined berm relating to agricultural activities (SIHP# 50-80-14-6636) was documented. SIHP# -6636 consists of the pre-Contact to early twentieth century land surface that underlies the dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects, which took place in the 1920s and 1930s. This land surface is a wetland deposit (Stratum III), which was thought likely to extend across the 6-acre parcel. This site also contains a sand berm that crosses the southeast corner of the project area near the intersection of Pi‘ikoi Street and Kapi‘olani Boulevard. This sand berm is illustrated on an 1884 map and may have been constructed in traditional Hawaiian times. SIHP# -6637 consists of a trash dump found in six trenches, all located in the northeast corner of the project area near Pi‘ikoi Street. The trash pit contained wood, brick, tires, ceramic dinnerware, insulators, rusted metal, and glass bottles. Many of the glass bottles were dated to the 1920s through 1940s. The type of material present did not seem to be individual household garbage, but may be related to the businesses in the surrounding area.

In 2004, CSH completed a literature review and field check for the Kapi‘olani Area Revised Sewer System project (Tulchin and Hammatt 2004). The project was composed of nine sub-areas, with sewer line reconstruction parallel to the existing sewer lines on Kalauokalani Way, Atkinson Drive, Rycroft Street, an easement off Cedar Street, an easement off Pensacola Street, Kona Street, Kapi‘olani Boulevard, and on Ala Moana Boulevard. No subsurface testing was conducted as part of the archaeological assessment. No surface archaeological or historical features were observed at any of the nine sub-areas. Background research of previous archaeology in the area suggested a high probability of encountering human skeletal remains.

3.4.7 Area East of Pi‘ikoi Street

In 1989, the State Parks archaeologist reported that one human burial was inadvertently found at a construction site at 1341 Kapi‘olani Boulevard (Smith 1989). In May 2006, CHS conducted a literature review and field inspection of a parcel of land on Kapi‘olani Boulevard (Hammatt 2006a). No surface historic properties were observed within the project area. From December 2005 through March 2006, CSH conducted an archaeological inventory survey for the Ala Moana Center Expansion Project (Hammatt 2006b). One historic feature (SIHP# 50-80-14-6847) was observed: a wooden box containing a mix of historic artifacts, including printed material (likely either the remains of a book or newsprint), wooden chopsticks, pig bone, a horse brush, a fragment of cane slag, a bottle fragment, and a spherical blue bead.

Section 4 Historic Background

4.1 Early Post-Contact History and Population Centers

Kewalo is located between two centers of population, Kou and Waikīkī, on the southern shore of pre-Contact O‘ahu. In Waikīkī, a system of taro *lo‘i* (irrigated fields) fed by streams, descending from Makiki, Mānoa, and Pālolo valleys, blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou (the area of downtown Honolulu surrounding the harbor) possessed shoreward fishponds and irrigated fields watered by ample streams descending from Nu‘uanu and Pauoa Valleys. The pre-Contact population and land use patterns of Kewalo may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with them. Thus, the attempt to reconstruct the Kewalo region (and the present study area) as it existed for the Hawaiians during the centuries before western contact and the modern urbanization that has reconfigured the landscape must begin with accounts of Kou and Waikīkī.

Waikīkī is actually the name of a large *ahupua‘a* encompassing lands stretching from Honolulu to Maunalua Bay. Within that *ahupua‘a*, by the time of the arrival of Europeans during the late eighteenth century, the area today known as Waikīkī had long been a center of population and political power on O‘ahu. According to Martha Beckwith (1940:383), by the end of the fourteenth century, Waikīkī had become “the ruling seat of the chiefs of O‘ahu.” The pre-eminence of Waikīkī continued into the eighteenth century and is confirmed by the decision of Kamehameha, in the midst of unifying control of the islands, to reside there after wresting control of O‘ahu by defeating the high chief, Kalanikūpule.

Chiefly residences were only one element of a complex of features sustaining a large population that characterized Waikīkī up through pre-Contact times. Beginning at least by the fifteenth century, a vast system of irrigated taro fields was constructed, extending across the littoral plain from Waikīkī to lower Mānoa and Pālolo valleys. This field system, an impressive feat of engineering, the design of which is traditionally attributed to the chief Kalamakua, took advantage of streams descending from Makiki, Mānoa, and Pālolo Valleys, which also provided ample fresh water for the Hawaiians living in the *ahupua‘a*. Water also was available from springs in nearby Mō‘ili‘ili and Punahou. Closer to the Waikīkī shoreline, coconut groves and fishponds dotted the landscape. A continuous zone of population and cultivation from the shoreline of present day Waikīkī Beach extended north, well into Mānoa Valley. The western and eastern bounds of this zone are less clear, and there are no specific references to Waikīkī’s abundance reaching into the Kewalo region.

A basic description of Honolulu/Kou up until the time of western contact is given by E. S. Craighill Handy and Elizabeth Handy:

> What is now Honolulu was originally that flatland area between the lower ends of Nu‘uanu and Pauoa Valleys and the harbor. [W. D.] Westervelt … wrote that ‘Honolulu was probably a name given to a very rich district of farm land near what is now … the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs at the time of Kakuhihewa’… It is probable that the chief referred to by Westervelt took his name from the harbor and adjoining

> land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou…. The number of heiau in this area indicates that it was a place of first importance before the era of foreign contact. (Handy and Handy 1972:479)

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a still predominantly native Hawaiian environment, still a “village,” on the brink of western-induced transformations:

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity…. Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town…. Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (arum esculentum) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. (Bingham 1847:92–93)

The Kewalo region would have been in Bingham’s view as he stood atop “Punchbowl Hill” looking toward Waikīkī to the south; it would have comprised part of the area he describes as the “plain of Honolulu” with its “fishponds and salt making pools along the seashore” (Bingham 1847:92–93).

Another visitor to Honolulu in the 1820s, Capt. Jacobus Boelen, hints at the possible pre-Contact character of Honolulu and its environs, including the Kewalo area:

> It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name (which as a result of variations in pronunciation is also written as Honolulu, and on some maps, Honoonoono). The landlocked side in the northwest consists mostly of tarro [Sic.] fields. More to the north there are some sugar plantations and a sugar mill, worked by a team of mules. From the north toward the east, where the beach forms the bight of Whytetee [Wakīkī], the soil around the village is less fertile, or at least not greatly cultivated. (Boelen 1988:62)

Boelen’s description implies that the Kewalo region and the present study area are within a “not greatly cultivated” region of Honolulu, perhaps extending from Pūowaina (Punchbowl Crater) at the north through Kaka‘ako to the Kālia portion of Waikīkī in the east.

A map of Honolulu drawn in 1855 by Joseph de La Passe, a lieutenant aboard the French vessel *L’Eurydice*, pictures the project parcels within a coastal marsh (Figure 9). The map shows fishponds and taro *lo‘i* (irrigated patches, shown as rectangles) surrounding the Project area, and massed around the streams descending from Nu‘uanu and Mānoa Valleys. Houses are scattered along King Street and in a line that will later be covered by Queen Street. The depicted

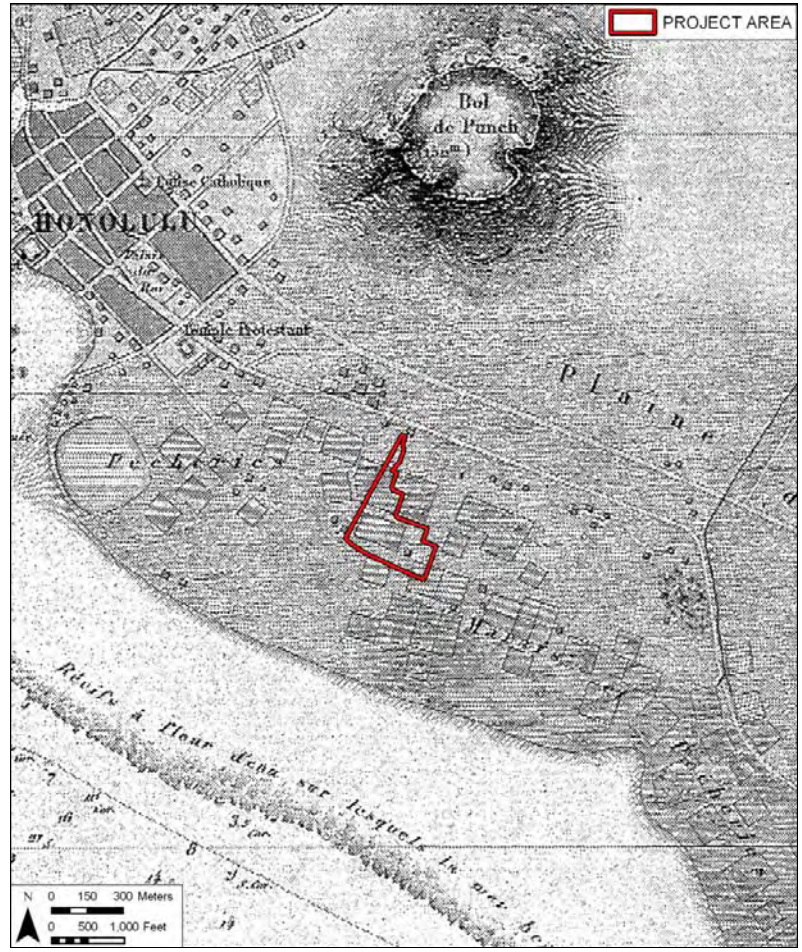

Figure 9. Portion of 1855 map of the Honolulu District by Lt. Joseph de La Passe; Project area is within and near fishponds and salt ponds (map reprinted in Fitzpatrick 1986:82–83)

areas of population and habitation concentration probably reflect distortions caused by the post-Contact shift of Hawaiians to the area around Honolulu harbor, the only sheltered landing on O‘ahu and the center of increasing trade with visiting foreign vessels. Kamehameha himself had moved from Waikīkī to Honolulu in 1809.

A clearer picture of Kewalo and the present study area develops with accounts of other visitors to and settlers of Honolulu during the first half of the nineteenth century. Gorman D. Gilman, who arrived in Honolulu in 1841, recalled the limits of Honolulu during the early 1840s in a memoir: “The boundaries of the old town may be said to have been, on the *makai* side, the waters of the harbor; on the *mauka* side, Beretania street; on the Waikīkī side [i.e. the area just beyond Punchbowl Street], the barren and dusty plain, and on the Ewa [west] side, the Nuuanu Stream” (Gilman 1904:97).

Gilman further describes the “barren and dusty plain” beyond (east of) Punchbowl Street:

> The next and last street running parallel [he had been describing the streets running *mauka-makai*] was that known as Punchbowl Street. There was on the entire length of this street, from the *makai* side to the slopes of Punchbowl, but one residence, the two-story house of Mr. Henry Diamond, *mauka* of King Street. Beyond the street was the old Kawaiahao church and burying ground. A more forsaken, desolate looking place than the latter can scarcely be imagined. One, to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horses and cattle had free access to the whole place. (Gilman 1904:89)

That the environs of the missionary enclave and Kawaiaha‘o Church were indeed “forsaken” and “desolate looking” in the 1820s when the missionaries first settled there is confirmed in the memoirs of the American missionary C. S. Stewart who, arriving on Maui after living at the mission on O‘ahu, declared Lahaina to be “like the delights of an Eden” after “four weeks residence on the dreary plain of Honoruru” (Stewart 1970:177). It is likely that these descriptions of the Honolulu plain also include the Kewalo region (at least for western sensibilities).

4.2 Mid-Nineteenth Century to Early Twentieth Century

The Organic Acts of 1845 and 1846 initiated the process of the Māhele (the division of Hawaiian lands), which divided private property in Hawaiian society. In 1848, the crown, the Hawaiian government, and the *ali‘i* (chiefs) received their land titles. The common people (*maka‘āinana*) received their *kuleana* awards (individual land parcels) in 1850, and thereafter. It is through records for Land Commission Awards generated during the Māhele that the first specific documentation of life in Kewalo and Kukuluāe‘o, as it had evolved up to the mid-nineteenth century, come to light.

Among the first descriptions of Kewalo by the Hawaiians themselves are the testimonies recorded during the 1840s in documents associated with LCA claims of the Māhele. The LCA records indicate that the traditional Hawaiian usage of the region and its environs may have been confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from Makiki and Mānoa Valleys. However, the testimonies do indicate that the area was inhabited and shaped by Hawaiians before the nineteenth century. The LCA records also reveal that, midway through the

nineteenth century, taro cultivation, traditional salt making and fishpond farming activities continued within Kewalo/Kukuluāe‘o area. These activities and the land features that supported them would be eliminated, or buried, during the remainder of the nineteenth century by the urbanization of Honolulu. The LCA records and historic maps and archival photographs document more precisely traditional Hawaiian settlement and subsequent historic land usage within and around the present Project area.

An 1884 map by Sereno Bishop (Figure 10) shows the location of the LCA parcels near the current Project area. This figure is color-coded to match the description of the lands indicated in the LCA testimonies: blue for fishponds, orange for salt ponds or salt lands, and green for house lots. As can be seen, the salt lands are mainly along the coast, the fishponds are usually located *mauka* of Queen Street, and the house lots are clustered around established roads, especially Queen and King Streets. The testimonies for LCA parcels near the Project area are summarized in Table 2.

4.2.1 The Māhele and Kewalo

While *ahupua‘a* along southeastern O‘ahu generally extended from the Ko‘olau mountain range to the seacoast, in the Honolulu area (Kona District), land divisions became more complicated. Because of the early development and importance of the coastal areas, several *ahupua‘a,* such as Nu‘uanu, Pauoa, Makiki, Mānoa, and Pālolo became “cut off” from the sea. In order to retain some access to all of the resources of the land, several ‘*ili* had *lele*, or jump lands, which were smaller contiguous or non-contiguous parcels in the uplands, river valleys, or along the coast. Kewalo was one of these *lele* lands, which were often independent of the adjacent *ahupua‘a*.

An early surveyor for the Hawaiian Government Survey office explains about *lele* in general.

> The next subject that claims attention is that of the subdivision of the ahupuaa. The subdivision of the Ahupuaa were called ili. . . . each, of course, named with its own individual title and carefully marked out as to boundary. . . .
>
> There were two features of the ili, referred to by the terms lele and ku, which are worthy of notice. . . . The ili often consisted of several distinct sections of land—one, for instance, on the seashore, another on dry, open land, or *kula*, another in the regularly terraced and watered kalo patch or *aina loi* district, and another still in the forest, thus again carrying out the equable division system which we have seen in the ahupuaa.
>
> These separate pieces were called, *lele*, i.e., “jumps,” and were most common on Oahu…. Punahou had anciently a lot on the beach near the Kakaako Salt Works [Kukuluāe‘o]; then the large lot with the spring and kalo patches where is now the school, and again a forest patch on the steep sides of Manoa Valley. Kewalo meanwhile had its seacoast adjoining Waikīkī, its continuous kula on the plain, and one-half of Punchbowl Hill and its kalo land in Pauoa valley.
>
> These different pieces were called variously, either by their own individual name or by that of the whole ili, thus puzzling one sadly when attempting to obtain information with respect to them. (Lyons 1894:1697)

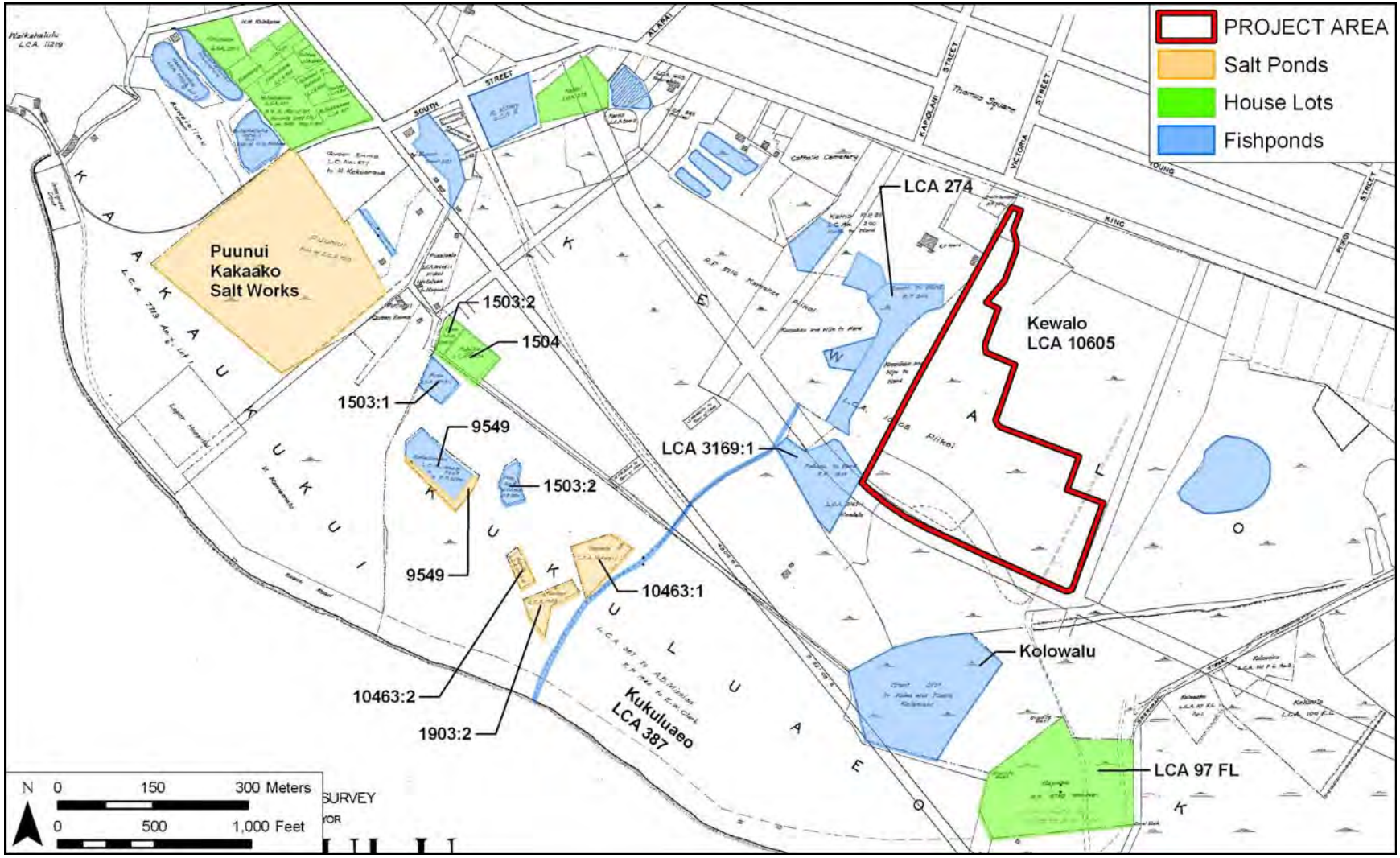

Figure 10. 1884 map of Honolulu, Kewalo Section, by S. E. Bishop, showing place names and Land Commission Award locations near the Project area (Hawai‘i Land Survey Division, Registered Map No. 1090)

Table 2. Land Commission Awards In and Near the Project Area

LCA Award	*‘Ili* or *Ahupua‘a*	Awardee	Land Use
387	Kukuluā‘eo	ABCFM	Salt lands attached to Punahou
1503:1	Kukuluā‘eo	Puaa	1 house lot and 1 fishpond
1503:2	Kukuluā‘eo	Puaa	2 fishponds
1503:3	Kukuluā‘eo	Puaa	1 fishpond
1504	Kukuluā‘eo	Pahiha (Pahika)	1 house lot, 1 fishpond, and 1 salt bed
1903:2	Kukuluā‘eo	Lolohi	2 salt beds, 15 drains, 2 *poho kai*, 1 salt *kula*
3169	Kewalo	Koalele	Taro patches and fishponds
9549	Kukuluā‘eo	Kaholomoku	3 fishponds and 4 salt pans on Waikīkī side of pond; Kaholomoku gave half of the salt collected on his land to Rev. Bingham
10463:1	Kukuluā‘eo	Napela	2 ponds, one ditch, and one house lot
10463:2	Kukuluā‘eo	Napela	Salt land
10605	Kewalo	K. Pi‘ikoi	No information
97 FL (Royal Patent 3782)	Kālia	Fort Lands	Taro ponds and 3 fishponds

Kewalo Ahupua‘a was awarded to Kamake‘e Pi‘ikoi, wife of Jonah Pi‘ikoi, as part of LCA 10605, ‘*āpana* (lot) 7. Jonah Pi‘ikoi was an *ali‘i,* a retainer of Kauikeaouli, Kamehameha III, who held several government posts. The award was divided between himself and his wife (Kame‘eleihiwa 1992:269). According to Pukui et al. (1974:184), Pi‘ikoi built the first two-story wooden house in this area, which was located near the future site of McKinley High School.

Kewalo had a narrow upland section (often called “Kewalo Uka”), a larger lower river valley/plain section, and a small coastal section (called “Kewalo Kai”) joined by a small strip of land. The Project area is within this large LCA claim. Unfortunately, the *ali‘i*, such as Jonah Pi‘ikoi, who were granted large awards were not required to state the land use for their awards, so there is little information on the agricultural or habitation use of Pi‘ikoi’s LCA 10605.

However, there is one smaller LCA award to a commoner adjacent to the southern border of the Project area, LCA 3169, ‘*āpana* (lot) 1. LCA 3169, awarded to Koalele was described as:

> Mahoe, sworn, says he knows the land of Claimant in ‘Kewalo’. It consists of some kalo [taro] patches mauka and some Lokos [fishponds] makai. The kalo patches are bounded mauka by Kealoha; bound Waikīkī side by Kuaipaka’s, makai by the konohiki, ‘Ewa side by J. Booth. The fish ponds are bounded mauka by the konohiki.
>
> Waikīkī and makai side, the same. Honolulu side by J. Booth. Clt received his land from Kapihi in the life time of Kinau and he has held the same without dispute till the present time. (Foreign Testimony 1848:507)

The taro patches were in the *mauka* lot, probably north of King Street. The lot south of the Project area consisted of fish ponds. It is evident from the 1855 La Passe map (Figure 9), that there were also once fish or salt ponds in the current Project area. An 1897 map (Figure 13) indicates that the swampy central Kewalo section was used to plant rice by the late nineteenth century.

4.2.2 Curtis and Victoria Ward and the “Old Plantation”

The Ward Estate once covered a large portion of the Kaka‘ako Mauka District. The area north of Queen Street was within the *ahupua‘a* of Kewalo and was part of LCA 272 to Joseph Booth. Joseph Booth was an early English resident of the Hawaiian Islands who operated a saloon and hotel in Honolulu, known at the time of the Māhele as the Eagle Tavern. He was granted lands in downtown Honolulu (where the tavern was located), in Kewalo Uka (Pacific Heights area), in the ‘*ili* of Kapuni, and in an area with “three fish ponds, and a part of the plain near the road leading to Waikiki.” Little information on these three fishponds is given in the LCA testimony, but the Royal Patent No. 306 for these lands, mentions one known as “the large fishpond” or “long fishpond” (*loko ia nui*), which had two huts beside it. This pond would later be modified into the “lagoon” on the Ward Estate, shown as a long T-shaped pond on the 1884 Bishop map (Figure 10). The division between the Ward Estate in Kewalo and the Kewalo portion of the current Project area (separated by a fence) is shown on an 1887 map by W. A. Wall (Figure 11).

Curtis Perry Ward, a native of Kentucky, came to the Hawaiian Islands in 1853 and soon established a livery and draying business, moving goods from the harbor to Honolulu town and loading goods at the docks for the whaling and shipping industries. In 1865, he married Victoria Robinson, who was descended from the Hawaiian *ali‘i* and early French and British residents. For his new family, Ward purchased at auction the 12-acre estate of Joseph Booth, Royal Patent 306, and additional contiguous lands in the Kō‘ula area in 1870 (Hustace 2000:21–25). This constituted the *mauka* portion of “Old Plantation” from Thomas Square on King Street to the *makai* border at Waimanu Street. A few years later (before 1875), Ward added to his property with the purchase of 77 acres and 3,000 feet of ocean frontage in the ‘*ili* of Kukuluāe‘o, *makai* of Queen Street. The Wards had a permanent easement for the ‘*auwai* (ditch) that extended from the long fishpond to the sea through the Kukuluāe‘o section. Makaloa grass, used to make mats and hats, grew along this *‘auwai* and was one source of income for the family.

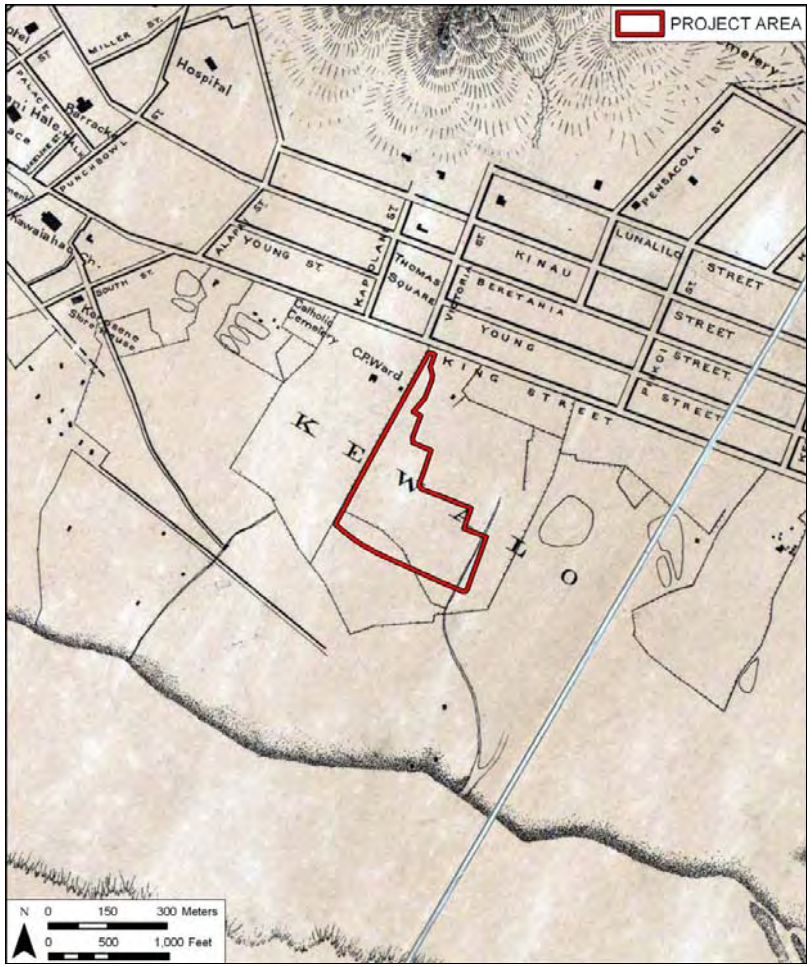

Figure 11. Portion of 1887 Honolulu and Vicinity map by W. A. Wall, showing Project area in Kewalo separated from the Ward Estate by a fence (map on file at Library of Congress)

Workers were hired to clear the fishponds and ditches, plant taro in the fishponds, fence in pastures for the horse, plant 6,000 coconut trees, plant *kiawe* trees for firewood, and restore the *kāhaka* (salt pans) near the shore (Hustace 2000:41).

After the death of her husband in 1882, Victoria derived much of her income from "eggs, bananas, firewood, '*awa*, taro leaf, *makaloa* grass, chickens, fish, hay, pigs, salt, white sand, *mānienie* grass, hides, butter, squid, and horses" collected from the estate (Hustace 2000:47). On this estate, Victoria Ward raised her seven daughters: Mary (Mrs. Ernest Hay Wodehouse); Keakealani (Mrs. Robert Booth); Annie (Mrs. Wade Armstrong); Mele Elizabeth (Mrs. Frank Hustace, Sr.); and three unmarried daughters, Kathleen, Lucy, and Kulumanu Ward. In 1930, Victoria Ward incorporated Victoria Ward, Limited to manage the estate. In 1957, the City and County of Honolulu purchased the *mauka* portion of the estate to construct the new Blaisdell Civic Center (Hustace 2000:67, 77).

A photograph taken in 1888 (Figure 12) shows the Kewalo area inland of the coast and west of the division fence on the eastern boundary of the Ward Estate. In a history on his family, Frank Ward Hustace (2000:36) identified the area on the east side of the fence as the future site of McKinley High School.

Figure 12. 1888 photograph of fence on east side of Ward Estate; the wetland in the background is the future site of McKinley High School (Catherine Isobel Hustace Collection; photograph reprinted in Hustace 2000:36)

4.2.3 Kaka‘ako Salt Works and the Salt Pans of Kewalo and Kukuluāe‘o

Much of the coastal lands in Kewalo and Kukuluāe‘o were used to produce salt. The Hawaiians used *pa‘akai* (salt) for a variety of purposes, to flavor food, to preserve fish, for medicines, and for ceremonial purposes. David Malo describes the traditional method of salt production:

> *O ka paakai kekahi mea e pono ai, he mea e ono ai, ka ia, a me ke koekoe o ka paina ana, he mea hana ia ka paakai, ma kekahi aina, aole i hana a ma kekahi aina, o ke kai makai, e kii aku no ka wahine, a lawe mai ma ke poi, a ke kai hooholo ia mai kekahi ma kauwahi mai.*
>
> *E waiho kela kai ma kekahi poho paha, he ekaha paha, he kahe ka paha, a liu malaila, alaila lawe ana kauwahi e, a paakai iho la no ia, o ka papa laau ka mea kui poi*. (Malo 2006:73)
>
> Translation
>
> Pa‘akai (salt) is another beneficial item. It is used to make fish delicious and tasteless foods edible. Pa‘akai is made at a particular place, [but] it [salt] is not actually made from this spot, rather it [salt water] came from the sea. A woman went to get some when the sea crashed [upon the rocks] and she ran back [the salt water] to this particular spot.
>
> That salt water (*kai*) is placed in, perhaps, a depression (*poho*) or a “Bird’s nest” (*ēkeha*) or rock basin (*kāheka*) and allowed to evaporate (*liu*). Then it is taken to another spot and is formed into *pa‘akai*. (Malo 2006:95)

Captain Cook was the first to note the method of making salt in prepared “salt pans”:

> Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their saltpans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation. Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons, in the Resolution only. (Cook 1784:151)

In an article on Hawaiian salt works, Thomas Thrum discusses the large salt works at Ālia Pa‘akai (Salt Lake in Moanalua) and at Pu‘uloa on the western loch of Pearl Harbor. Kamakau (1961:409) reported “The king and Isaac of Pu‘uloa are getting rich by running the salt water into patches and trading salt with other islands.” The salt was sent to Russian settlements in the Pacific Northwest, where it was used to pack salmon (*Hawaiian Gazette,* January 29, 1897).

Thrum also mentions a salt works in Kaka‘ako:

> Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E. O. Hall, and subsequently E. O. Hall & Son, until comparatively recent years. This

> enterprise was carried on very much after the ancient method of earth salt pans as described by Cook and Ellis. (Thrum 1924:116)

The export of salt declined in the late nineteenth century. Thrum (1924:116) states that the apex of the trade was in 1870, but by 1883, he noted that “pulu, salt and oil have disappeared entirely” from the list of yearly exports (Thrum 1884:68). By 1916, only one salt works, the Honolulu Salt Co., was still in operation. Salt continued to be manufactured for local use; the Kaka‘ako Salt Works appears on maps as late as 1891, and a page in Victoria Ward’s ledger for 1883 notes a yearly income of $651.50 received from her “Salt Lands” in Kukuluāe‘o (Hustace 2000:50).

4.3 Early Twentieth Century Land Reclamation Projects

The Project area is located mostly in what was the wetland plain of Kewalo. This area provided ancient Hawaiians with the environment needed for the cultivation of fishponds, salt ponds, and subsistence crops such as taro. The Project area can be seen located among fishponds and salt ponds on the 1855 La Passe map (Figure 9). The features expected from these cultural activities include berms, *lo‘i* (irrigated ponds), and fishpond sediments.

Following the initial years of European contact, Westerners engaged in new massive agricultural ventures. Immigrant workers from Asia were brought to Hawai‘i to labor in these new agricultural ventures, and as a result, rice also became a major crop in many areas. The wetlands of Kewalo were an ideal environment for the cultivation of rice, and the area yielded much of its traditional taro cultivation land to rice production. This is evident on the 1897 Monsarrat map (Figure 13).

In the early twentieth century, the land was altered more intensely for land-reclamation plans; the resulting dredge and fill projects obliterated what remained of traditional Hawaiian cultivation practices in the wetlands of Kewalo. The original wetland sediments as well as historic fill have been previously documented within the vicinity of the current project area and will most likely be encountered in the Project area.

Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

4.3.1 Kaka‘ako Reclamation

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea to use this dredged material, composed of sand and crushed coral, to fill in low-lying lands was quickly adopted. Between 1857 and 1870, the “Esplanade” between Fort and Alakea Streets was created on 22 acres of filled-in former reef and tideland. By 1874, Sand Island (or (Quarantine Island, originally, Kaholaloa Reef), site of the first immigration station, had been created over “reclaimed” land on reefs.

Figure 13. 1897 map of Honolulu District by M. D. Monsarrat; Project area is within swamp land planted with rice (Hawai‘i Land Survey Division, Registered Map. No 1910)

By the 1880s, filling-in of the mud flats, marshes, and salt ponds in the Kaka‘ako and Kewalo areas had begun. This filling-in was pushed by three separate but overlapping improvement justifications. The first directive or justification was for the construction of new roads and the improvement of older roads by raising the grade so the improvements would not be washed away by flooding during heavy rains.

Although public health and safety were prominently cited according to Nakamura (1979:113), the main desire (and third justification) to fill in Honolulu, Kewalo, and then Waikīkī lands was to provide more room for residential subdivisions, industrial areas, and finally tourist resorts. In the early part of the twentieth century, Kaka‘ako was becoming a prime spot for large industrial complexes, such as iron works, lumber yards, and draying companies, which needed large spaces for their stables, feed lots, and wagon sheds.

In 1904, the area around South Street from King to Queen Streets was filled in. The Hawaii Department of Public Works (1904:117) reported that “considerable filling [was] required” for the extension of Queen Street, from South Street to Ward Avenue, which would “greatly relieve the district of Kewalo in the wet season.”

4.3.2 Kewalo Reclamation Project

Although the Board of Health could condemn a property and the Department of Public Works could then fill in the land, the process was rather arbitrary and piecemeal. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo, consisting of 140 land parcels (including areas once known as Kukuluāe‘o and Ka‘ākaukukui), which had numerous ponds (Hawai‘i Department of Public Works 1914:196).

In 1914, the entire the area:

> bounded by King street, Ward avenue, Ala Moana and South street, comprising a total area of about two hundred acres, had been found by the board of health of the Territory to be deleterious to the public health in consequence of being low and below ‘the established grades of the street nearest thereto’ and at times covered or partly covered by water and improperly drained and incapable by reasonable expenditure of effectual drainage, and that said lands were in an insanitary and dangerous condition. (Hawaii Reports 1915:329)

The first land to be filled in was the portion of the Ward Estate Kukuluāe‘o property west of Ward Avenue; it was completely filled in by June of 1913. By August, the rest of the Ward Kukuluāe‘o lands west of Ward Avenue had been completely filled, and by February 1914, all of the land from South to Ward Streets, and from Ala Moana Boulevard to Queen Street had been filled.

The expense of the suit did manage to shut down operations planned for the area from Ward Street to Waikīkī (Thrum 1916:159–160), an area that includes the present Project area. This land was mainly owned by the Bishop Estate, who leased the land to small farmers growing taro and rice and raising ducks in the ponds. In 1916, the Bishop Estate announced that as soon as their present tenant leases expired they planned to fill the lands and divide them into residence and business lots (Larrison 1917:148–149). In 1919, a portion of the coastal section of the Bishop Estate lands was secured by the government in order to expand the Kewalo Basin (Thrum 1920:148).

4.3.3 Kewalo Basin Dredging

In 1919, the Hawai‘i Government appropriated $130,000 to improve the small harbor of Kewalo for the aim of “harbor extension, in that it will be made to serve the fishing and other small craft, to the relief of Honolulu harbor proper” (Thrum 1920:147). As the area chosen for the harbor was adjacent to several lumber yards, such as the Lewers and Cooke yards, the basin was initially made to provide docking for lumber schooners, but by the time the wharf was completed in 1926, this import business had faded, so the harbor was used mainly by commercial fishermen. The dredged material from the basin was used to fill a portion of the Bishop Estate on the western edge of Waikīkī (possibly including the current Project area) and some of the Ward Estate in the coastal area east of Ward Avenue (U.S. Department of the Interior 1920:52). In 1941, the basin was dredged and expanded to its current 55 acres. In 1955, dredged material was placed along the *makai* side to form an 8-acre land section protected by a revetment.

4.3.4 Waikīkī Reclamation Project

It was during the 1920s that southeast O’ahu would be transformed when the construction of the Ala Wai Drainage Canal—begun in 1921 and completed eight years later—resulted in the draining and filling in of the remaining ponds and irrigated fields of Honolulu and Waikīkī. The canal was one element of a plan to urbanize Waikīkī and the surrounding districts, first conceived of in 1906. Dredging for the Ala Wai Canal began in 1921 and was completed seven years later. The final result was a “canal three miles long, with an average depth of twenty-five feet and a breadth of two hundred fifty feet” (*Honolulu Advertiser*, 17 October 1928:2:16).

The first action was to dig a canal parallel to the coast along Waikīkī Beach. The dredged material was placed on adjacent properties from McCully Street to Kapi‘olani Park. This action affected several private landowners, including the Bishop Estate and the Booth Estate. The second action was to dredge a canal from the beach towards the reef. The material dredged was pumped to the new McKinley High School site, an area of former large ponds adjacent to the eastern boundary of the *mauka* portion of the Ward Estate (Hawaii Governor 1922:49–50). Additional dredged material was used to fill the area *makai* of the school grounds in 1930 (Hawaii Governor 1930:74).

Hawaiian Dredging Company registered their title to the Kolowalu parcel in 1929. This company, founded in 1902 by Walter Dillingham, president of the Oahu Land and Railway Company, had won the initial bid for dredging associated with the construction of the Ala Wai Canal (Thrum 1923:66). Hawaiian Dredging may have obtained title to the land in 1929 so that they did not have to obtain permission from the owner to fill the ponds. The current Project area was probably filled during this time period. Besides hydraulic pumped fill provided by Hawaiian Dredging Company, the area may have also been used as an area to dump domestic trash.

4.3.5 Urban Development

The 1884 Bishop map (refer to Figure 10) shows the nascent traces of the future development in the grid of roads stretching inland from the coast in the late nineteenth century. Kewalo was considered outside the Honolulu town boundary and were used in the middle to late nineteenth century as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. Then in the beginning of the twentieth century, the area was used as a place for sewage treatment

and garbage burning, finally becoming an area for cheap housing and commercial industries (Griffin et al. 1987:13).

During the first half of the twentieth century, both rice fields and marshlands would be eliminated, as Kewalo lands were filled to accommodate the expanding urbanization of Honolulu. The 1887 map surveyed by W. A. Wall (refer to Figure 11) shows a corridor of streets extending diagonally from Honolulu Town, including Queen Street, which was planned to connect to the beach road to Waikīkī. The Queen Street alignment appears to follow the route of the traditional trail from Honolulu to Waikīkī, described by John Papa ‘Ī‘ī. This trail likely ran on a sand berm raised above the surrounding marshlands and coral flats. The location of the northern Kaka‘ako boundary adjacent to the trail/Queen Street corridor suggests that at least the *makai* portion likely comprised a sandy dryland environment in the traditional Hawaiian landscape.

A 1919 U.S. War Department map (Figure 14) shows residences clustered around Queen Street and Ward Avenue. There were still many ponds east of the Kaka‘ako District, especially at the future site of McKinley High School, and the area east along the coast, which would be developed into the Ala Moana Shopping Center and Park. The map indicates that the Project area was within a swamp, probably still used for rice cultivation. There is a trail along the eastern boundary of the Project area that aligns with the *makai* end of Victoria Street, which connects the residential areas around King Street to the residential areas along Queen Street.

A 1927–1928 U.S. Geological Survey map (Figure 15) shows the first buildings of the new McKinley High School campus and also illustrates that the eastern portion of the Kaka‘ako District is still undeveloped, with dotted lines showing unimproved or proposed streets. However, the land was inhabited more than is evident from this map. The Ward family leased to the Japanese lands for camps, schools, playgrounds, temples, and shrines. Kaka‘ako was one of the first residential areas for working class families, housing people working at the laundries, the harbor, the Honolulu Iron Works, the Honolulu Brewery, and truck drivers, seamen, and fishermen. In 1940, Kaka‘ako had a population of over 5,000 residents. Hawaiians, Portuguese, Chinese, and Japanese settled in camps based on their ethnic origins, but they came together for social and community functions.

After World War II, the Kaka‘ako area became increasingly industrialized, and residents moved out to the newer subdivisions away from the Honolulu central area. A 1943 U.S. War Department map (Figure 16) is the first to show the newly developed Kewalo Basin. The Kewalo Channel had been dredged in 1924 and the McFarlane Tuna Company (now Hawaiian Tuna Packers) built a shipyard there in 1929 for their fishermen’s “sampan fleet.” A 1956 U.S. Army map of O‘ahu (Figure 20) illustrates the continued construction of buildings and fields at McKinley High School, including an athletic field within the current Project area.

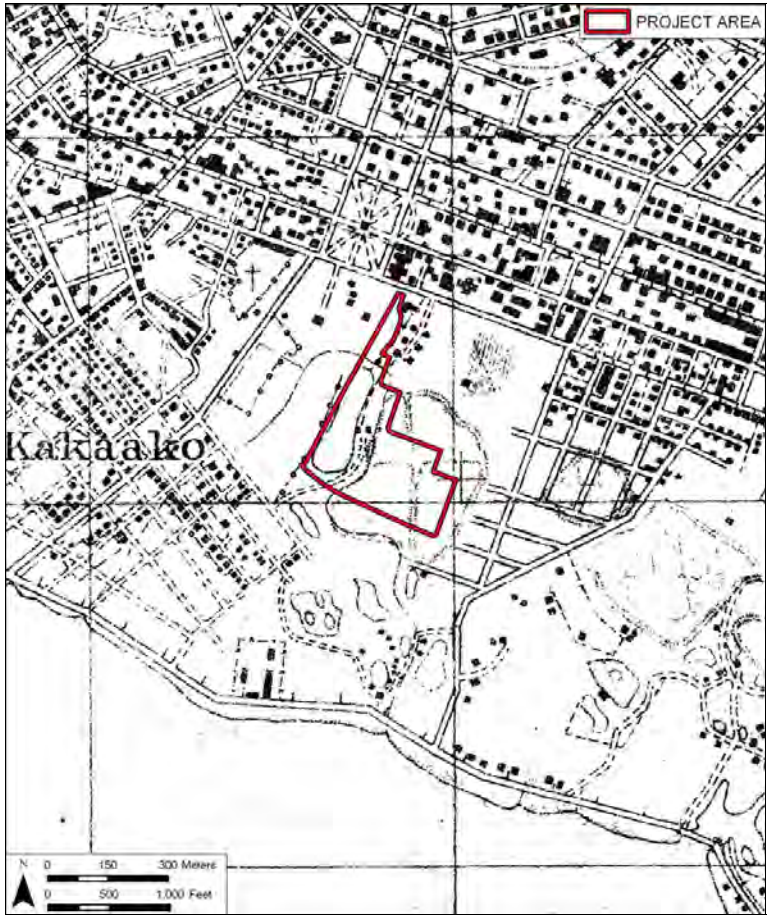

Figure 14. 1919 U.S. War Department fire control map of O‘ahu, Honolulu Quadrangle; the current Project area is within and surrounded by ponds

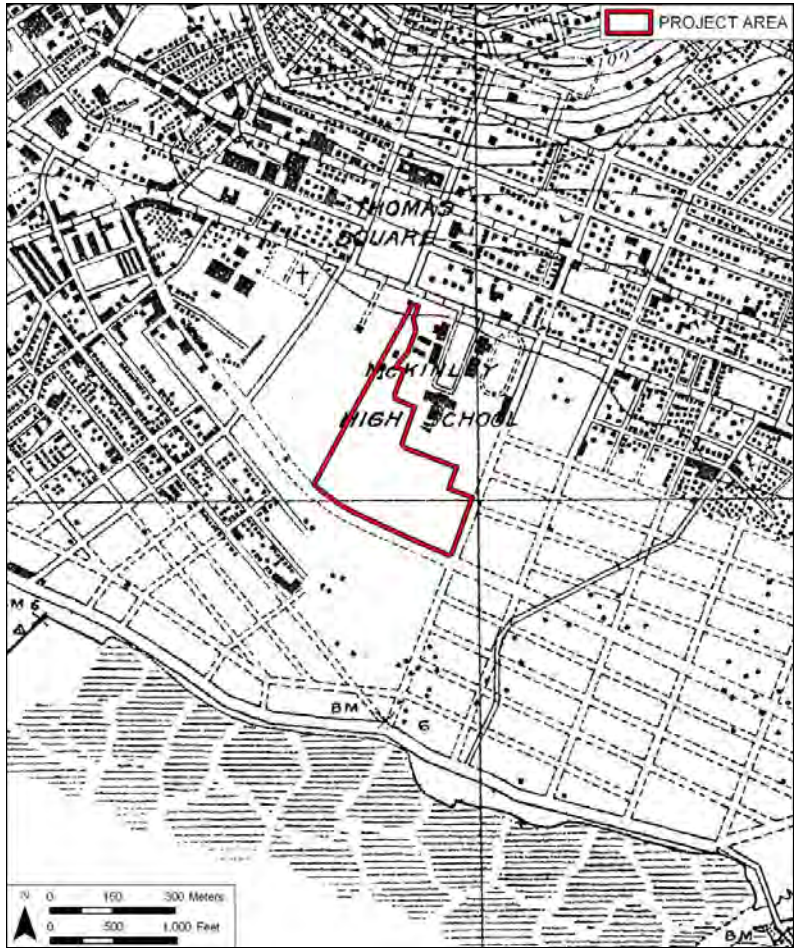

Figure 15. Portion of 1927–1928 U.S. Geological Survey map, Honolulu quadrangle, with current Project area south and west of the newly constructed McKinley High School

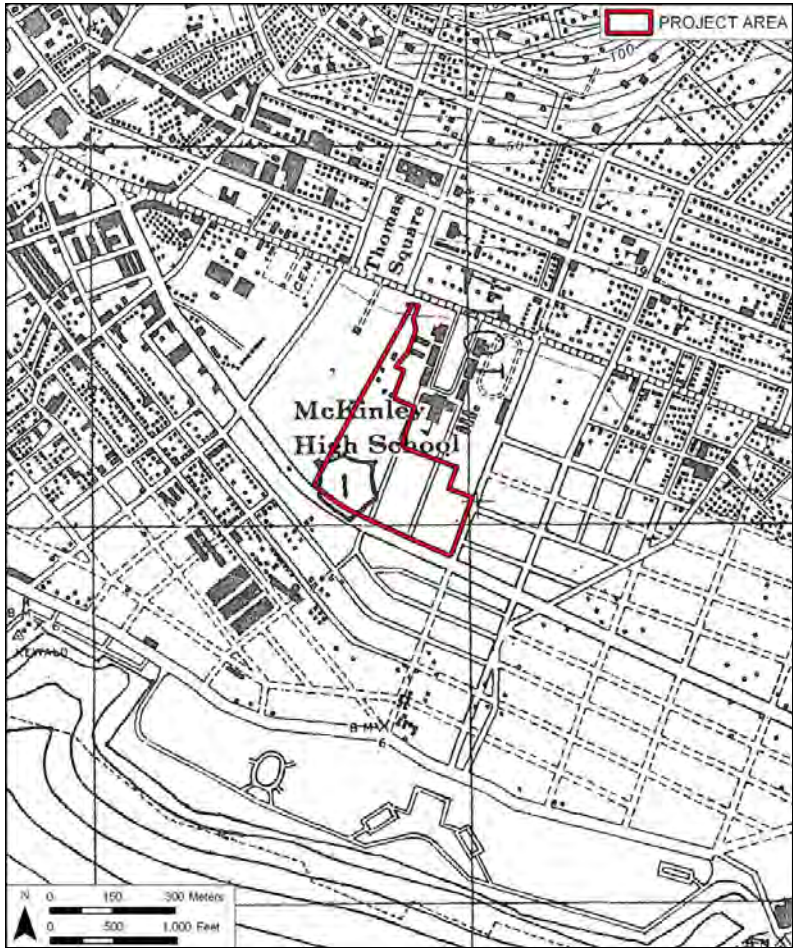

Figure 16. Portion of 1943 U.S. War Department map, Honolulu quadrangle, with addition of access roads within the McKinley High School campus

4.3.6 History of McKinley High School

McKinley High School has a long history in the development of education in Honolulu. In 1832, land on Bethel Street near Honolulu Harbor was secured to build a new church, one primarily devoted to services for the numerous visiting seamen who stopped at Honolulu for supplies and rest during long trading voyages or on whale hunts. This new church was called the Bethel Chapel or the Seamen’s Chapel (Dabagh and Case 1988:9). In 1848, several foreigners connected with trading voyages had settled around Honolulu and attended the Bethel Chapel. They decided to establish a separate church for resident traders and businessmen. Bethel Chapel became known as the First Foreign Church (although it also retained its original names) and the new church was called the Second Foreign Church. The members built their new church at the corner of Fort and Beretania Streets, and it quickly became known as the Fort Street Church. In 1887, the Bethel Chapel and the Fort Street Church united to become the Central Union Church (Dabagh and Case 1988:21, 35).

The churches were established for church services and missionary work, but they were also important in the establishment of early educational endeavors. In 1865, the Fort Street English Day School was established at the Fort Street Church as a private school. Several of the original students were from the closed Oahu Charity School, which had been built in 1832. The school moved to a new building at Fort and School Streets in 1869 and was taken over by the Board of Education, becoming a select school (a public school with some tuition) Alexander 1909:35–36). In 1895, the younger Fort Street students were moved to Ka‘iulani School and the older students were moved to the former home of Princess Ruth Luka Ke‘elikōlani in Kapālama, built for her in 1878. The new school for the older students was renamed the Honolulu High School, which was only one of four public high schools in the Hawaiian Islands at the time. The other three high schools were at Hilo on Hawai‘i, Hāmākuapoko on Maui, and Līhu‘e on Kaua‘i.

The school moved again in 1907 when a new campus for the Honolulu High School was built on the corner of Beretania and Victoria Streets, two blocks north of its present location (Figure 18). The new school was named the President William McKinley High School, who, in 1898 was the U.S. President to sign the Newlands Resolution. From 1898 forward, Hawai‘i was referred to as the Territory of Hawai‘i (until 1959 when the official name changed to the State of Hawai‘i). McKinley High School was the only public high school in Honolulu prior to the construction of Farrington High School in 1936. McKinley High School was particularly important for the first and second generation descendants of sugar plantation immigrant workers, and more than half of the student population was composed of students of Japanese descent in the 1930s (Odo 2004:76).

According to the McKinley High School website, “A statue of President McKinley was commissioned for $8,000. Completed in New York, the Bronze eight-ton statue was shipped to Honolulu and dedicated on February 23, 1911” (President William McKinley High School). In 1911, the *Pacific Commercial Advertiser* reported that the statue was intended to “immortalize his memory” (*Pacific Commercial Advertiser* 1911). The *Joint Resolution to Provide for the Annexing of the Hawaiian Islands to the United States* (1898), or Newlands Resolution, signed by President McKinley, is a U.S. domestic law, not an instrument of international law. No treaty of annexation was ratified under U.S. law. Yet the McKinley Statue holds a document labeled “Treaty of Annexation” (Figure 17).

Figure 17. 2008 photo of McKinley Statue in front of McKinley High School (Kūhiō Vogeler)

Due to an increase in students, a new site was acquired in 1921, and the school moved in 1923 to its present location between King Street and Kapi‘olani Boulevard, west and adjacent to Pensacola Street (Figure 18). Besides the original four academic buildings, new structures were built over the years: the Scott Auditorium in 1927, the Wright Swimming Pool in 1926, the Tsukiyama Social Studies building in 1959, the Carey Cafeteria building in 1961, the Music building in 1962, the Student Council Gymnasium in 1964, and the Wise Football Field in 1965 (Figure 20). Many of the buildings were designed by noted architect Louis E. Davis, who designed the main buildings in the Spanish Colonial Revival style (President William McKinley High School 2009; Figure 19).

Figure 18. 1915–1921 photograph of McKinley High School on Beretania and Victoria Streets: note McKinley Statue on far right (Mr. and Mrs. Uldrick Thompson Photograph Album, Kamehameha Schools)

McKinley High School has many notable alumni, including Governor George Ariyoshi, U.S. Senator Daniel Inouye, sculptor Satoru Abe, Olympic swimming champion Duke Kahanamoku, and actor Dwayne “The Rock” Johnson (Public School Review 2009).

A series of Sanborn Fire Insurance Maps (Figure 21 through Figure 24) shows the evolution of the campus between 1914 and 1956. Fire insurance maps only illustrated areas of Honolulu with permanent or semi-permanent structures; therefore, the southern portion of the campus, on which the current Project area is located, is not shown on these maps. This section of the campus was open and used for athletic events. The 1956 O‘ahu map (refer to Figure 20), shows that by 1956 there were several buildings and an athletic field in the southern section, the portion near Kapi‘olani Boulevard.

Early photographs also show the changes in the campus. One photograph (Figure 25), probably taken in the early 1920s before the high school was built in 1923, shows the extensive

fishponds of the area east of the tree-covered Ward Estate. In a 1927 photograph (Figure 26), classrooms had been built on the northern section of the campus, but the southern section still had partitioned rice fields, although probably abandoned by that time. A 1938 photograph shows that by this time, these fields had been filled in and covered with a layer of coral (shown as white patches in the photograph), and an oval athletic field was laid out perpendicular to Kapi‘olani Boulevard in the southern section of the campus (Figure 27). In a 1949 photograph (Figure 28), the athletic field is in the southwestern corner, parallel to Kapi‘olani Boulevard.

Figure 19. McKinley High School with statue of President William McKinley in front (Joel Bradshaw 2009)

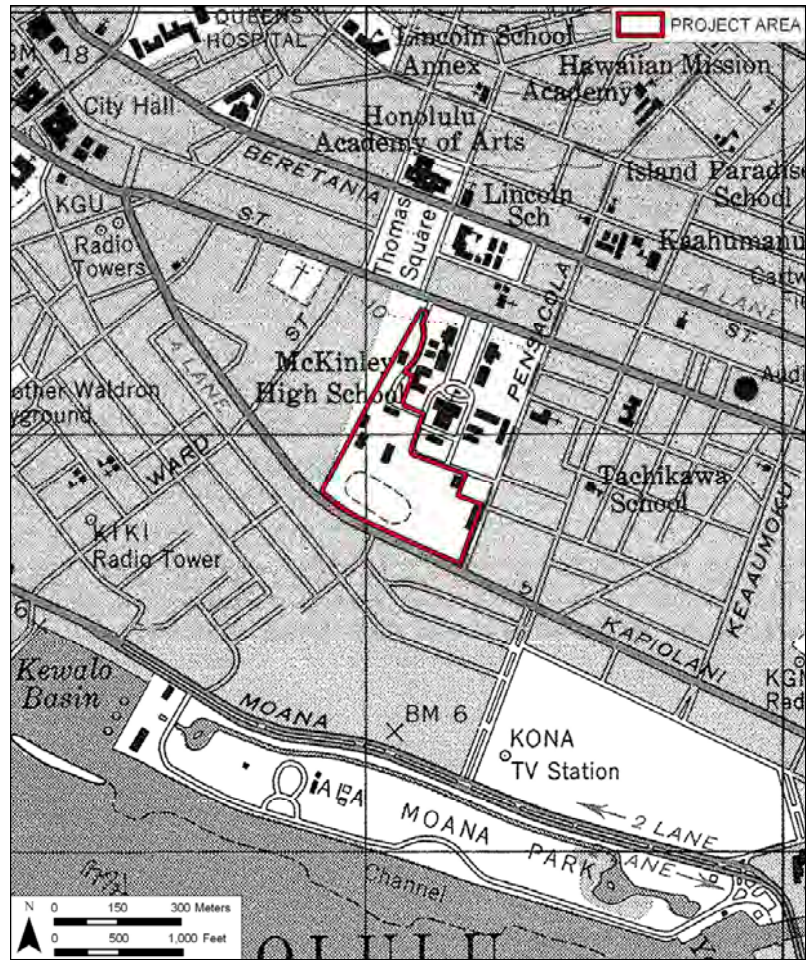

Figure 20. Portion of 1956 U.S. Army Mapping Service map of O‘ahu, Honolulu quadrangle, showing development of improved roads in the Kaka‘ako District and additions to McKinley High School, including a new athletic field within the current Project area

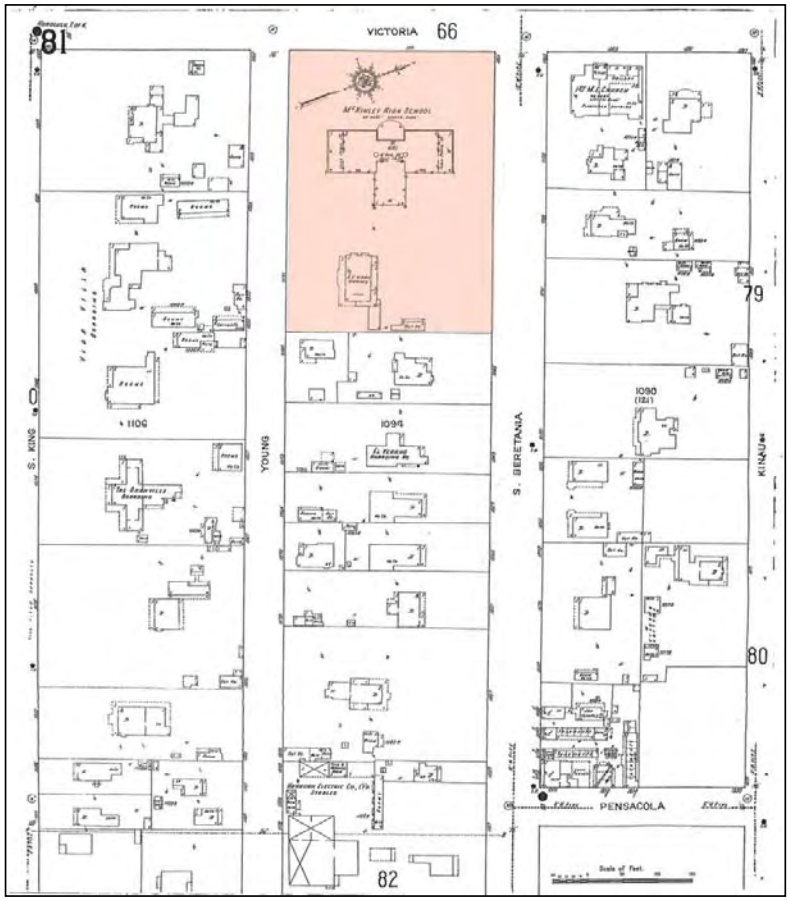

Figure 21. 1914 Sanborn Fire Insurance Map showing McKinley High School on Beretania Street between Victoria and Pensacola Streets, two blocks north of its present location

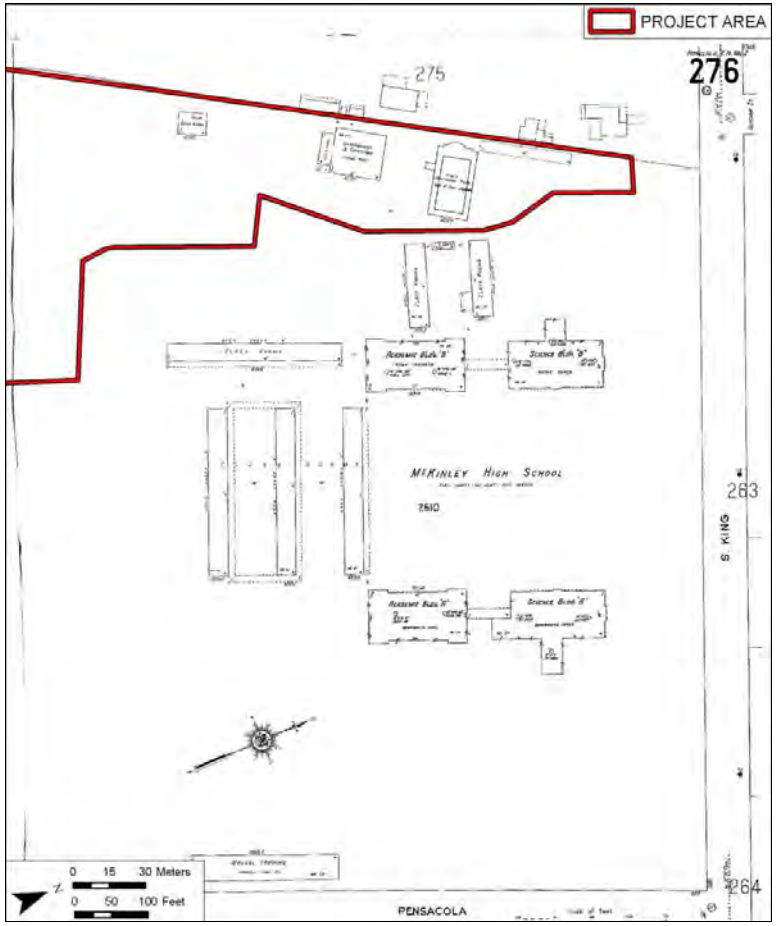

Figure 22. 1927 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of Project area not shown

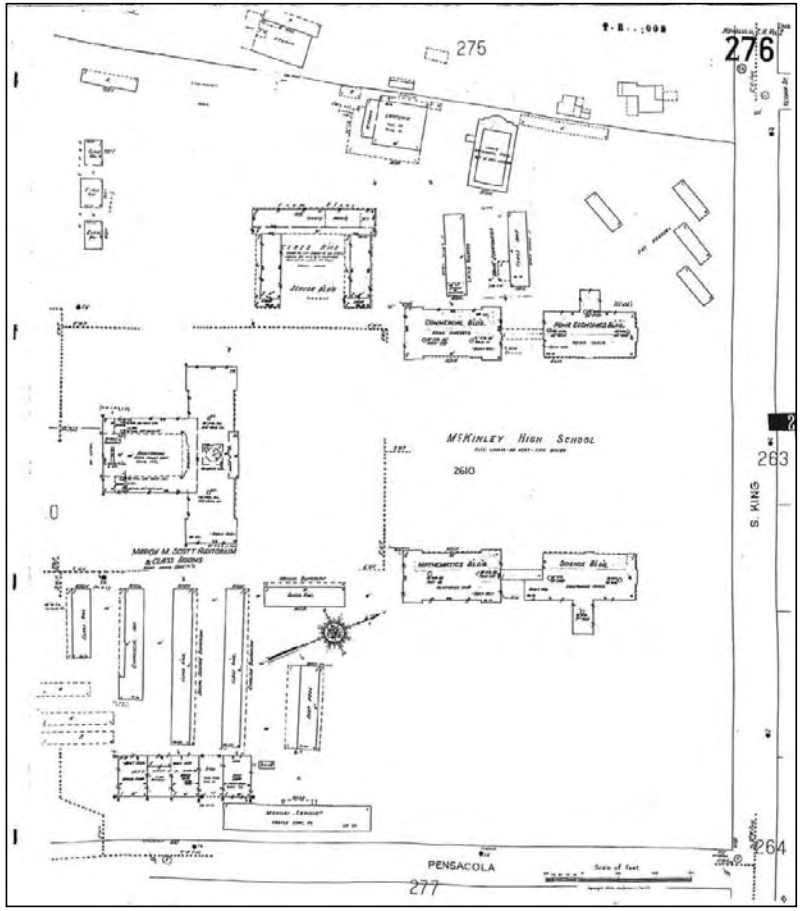

Figure 23. 1950 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of Project area not shown

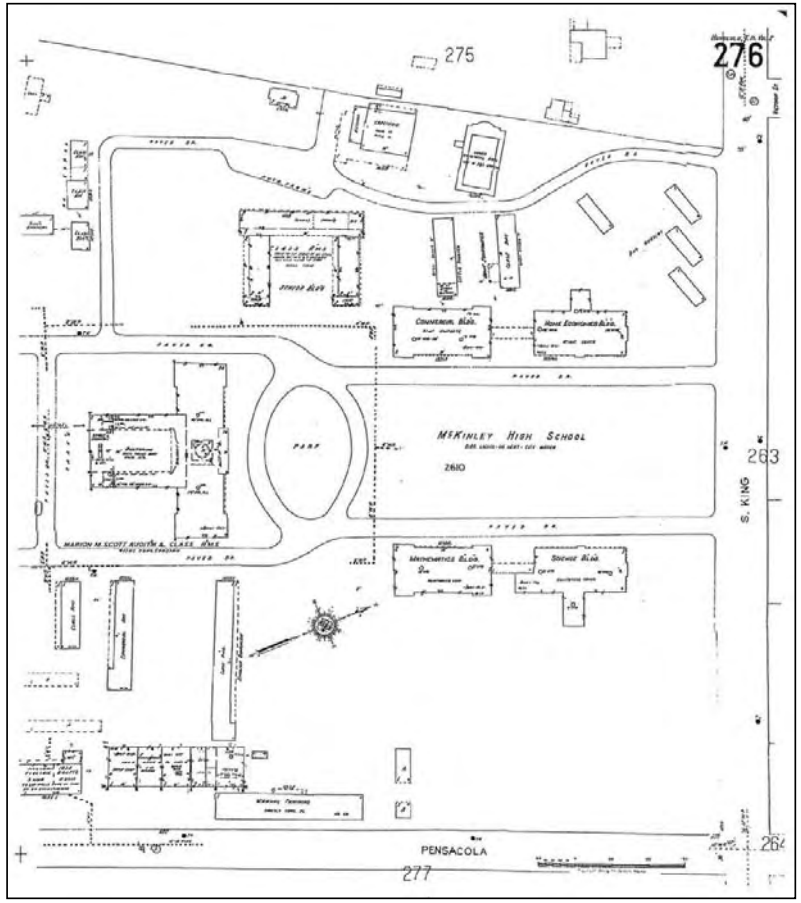

Figure 24. 1956 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of Project area not shown

Figure 25. Pre-1923 photograph of Kewalo ponds, the future site of McKinley High School; the Ward Estate (*kiawe* and coconut grove) is to the west (right side of photograph; Hawai‘i State Archives)

Figure 26. 1927 Aerial photograph of the McKinley High School campus; note old partitioned rice fields in the southwestern (lower left) corner within the current Project area (Hawai‘i Coastal Geology Group)

Figure 27. 1938 photograph of McKinley High School with athletic field in southwest (upper left) corner, perpendicular to Kapi‘olani Boulevard (U.S. Army Museum-Hawai‘i)

Figure 28. 1949 aerial photograph of McKinley High School campus with athletic field in southwestern corner, parallel to Kapi‘olani Boulevard (Hawai‘i State Archives)

Section 5 Community Consultation

Throughout the course of this assessment, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the Project area. This effort was made by letter, e-mail, telephone and in person contact. The initial outreach effort was started in August 2010. Community consultation was completed in December 2010. In the majority of cases, a letter (Appendix D), map, and an aerial photograph of the Project area were mailed.

In most cases, two to three attempts were made to contact individuals, organizations, and agencies apposite to the CIA for the Project. The results of the community consultation process are presented in Table 3. Written statements from organizations, agencies, and community members are presented in Sections 5.1 and 5.2 below and summaries of interviews with individuals are presented in Section 6. The interview questions are provided in Appendix E.

Table 3. Results of Community Consultation

Name	Affiliation, Background	Comments
Agard, Louis “Buzzy”	KAHEA	Sent letter and figures on August 30, 2010
Ailā, William	Hui Mālama I Na Kupuna O Hawai`i Nei	Sent letter and figures on August 30, 2010
Apo, Peter	MVE Pacific—Architects for Kaka‘ako Makai Master Plan	Sent letter and figures on August 30, 2010
Ayau, Halealoha	Hui Mālama I Nā Kupuna o Hawai‘i Nei	Sent letter and figures on August 30, 2010
Becket, Jan	Photographer of sacred sites	Sent letter and figures on August 30, 2010
Burke, Jackie Kaho‘okele	KAHEA	Sent letter and figures on August 30, 2010 CSH e-mailed Ms. Burke on November 23, 2010

Cayan, Coochie	State Historic Preservation Division, History and Culture Branch Chief	Sent letter and figures on August 30, 2010 CSH received response on September 2, 2010; SHPD recommended that CSh contact Bill Souza, the Ward Family, and Mr. Van Diamond (due to time constraints, we CSH was unable to contact these specific community contacts)
Cazimero, Kanoe	Kawaiaha‘o Church	Sent letter and figures on August 30, 2010
Ching, Baron	Kahu for Kaniakapupu—Kau‘ikeaouli’s Summer Palace	Sent letter and figures on August 30, 2010. CSH sent e-mail November 21, 2010
Chun Oakland, Suzanne	Hawai‘i State Senator, Representing 13th District	CSH phoned Senator Chun Oakland, left message on December 7, 2010 CSH again phoned Senator Chun Oakland on December 8, 2010: after speaking with the Senator CSH emailed her and included outreach letter and figures CSH interviewed Senator Chun Oakland on December 9, 2010; Senator; Senator Chun Oakland signed release form
Cruz, Lynette	President, Ka Lei Maile Ali‘i Hawaiian Civic Club	Sent letter and figures on August 30, 2010
Flores, George Kahumoku	Member, Ka Lei Maile Ali‘i Hawaiian Civic Club	Sent letter and figures on August 30, 2010 CSH sent e-mail sent November 21, 2010

Kai, Carole	McKinley High School alumnus, Carole Kai Charities	CSH sent email and phoned Mrs. Kai on November 29, 2010 CSH phoned Mrs. Kai and left message December 2, 2010 CSH again phoned Mrs. Kai and spoke with her about the project on December 6, 2010 CSH left message for Mrs. Kai on December 8, 2010
Kapanui, Lopaka	Famous storyteller, folklorist	CSH sent letter and figures on August 30, 2010 CSH e-mailed Mr. Kapanui on November 23, 2010 Mr. Kapanui responded on 23 Novemeber 2010; interview scheduled for November 29, 2010 CSH eventually interviewed Mr. Kapanui on December 15, 2010; Mr. Kapanui signed the release form
Kapua, Charles	Kama‘āina of Kewalo Ahupua‘a	CSH emailed Mr. Kapua November 23, 2010 CSH sent email to his new email address December 6, 2010 CSH phoned Mr. Kapua again December 7, 2010 CSH interviewed Mr. Kapua on December 13, 2010

Kaopuiki, Pi‘ilani	McKinley High School alumnus	CSH sent email to Ms. Kaopuiki on November 22, 2010: Ms. Kaopuiki responded the same day CSH interviewed Ms. Kaopuiki on November 26, 2010; Ms. Kaopuiki signed authorization release form
Mitchell, Samuel	Member, Makiki Neighborhood Board	Sent letter and figures on August 30, 2010
Nāmu‘o, Clyde	Office of Hawaiian Affairs	CSH sent letter and figures to OHA on August 30, 2010 CSH phoned OHA to follow-up on letter December 2, 2010 CSH received response letter via e-mail attachment on December 3, 2010
Peahi, Curtis	Honolulu *kama‘āina*, McKinley High School alumnus	CSH sent letter and figures on August 30, 2010
Stender-Jenkins, Leimomi	Hawaiian Studies teacher at McKinley High School	CSH phoned Ms. Stender-Jenkins; then, sent letter and figures on December 2, 2010

5.1 State Historic Preservation Division

CSH contacted Phyllis “Coochie” Cayan, History and Culture Branch Chief of SHPD, on August 30, 2010. In a written response sent to CSH on August 31, 2010 (Figure 29), Ms. Cayan recommends reaching out to as many community forums as possible to reach the core families and individuals in the *ahupua‘a* who may be able to share *mana‘o* on any traditional cultural practices in the general area. Ms. Cayan suggested reaching out to the community through contacting the OHA newspaper, senior centers, neighborhood boards, the SHPO union, the Ward family, musician Mr. Van Diamond, and Bill Souza, chairman of the State Historic Review Board,

Ms. Cayan also expressed concern that although the Project area and surrounding lands have been heavily developed there is a possibility of finding cultural resources below ground due to historic building practices of building primarily above ground while leaving underground layers less disturbed. In nearby areas, pre-Contact and historic burials have been disturbed and later re-interred. Ms. Cayan also noted historic water sources, *lo‘i kalo*, and trails used for gathering, settlement, and access to the shoreline.

5.2 Office of Hawaiian Affairs

CHS contacted Clyde Nāmu‘o, Administrator of OHA, on August 10, 2010. In a written response sent to CSH on November 8, 2010 (Figure 30), Mr. Nāmu‘o did not have any comments specific to the project. Mr. Nāmu‘o recommended speaking to the Historic Hawaii Foundation regarding the preservation of several buildings designed by famous architect Vladimir Ossipof, which are located on the McKinley High School campus. Mr. Nāmu‘o also requested assurance that should ancestral remains be found, all ground altering activities will halt and OHA will be notified and consulted.

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR • WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

August 31, 2010

LOG NO: 2010.2869
DOC. NO: 1008PC008

TO: Brian Kawika Cruz, Cultural Researcher
Cultural Surveys Hawai‘i, P.O. Box 1114, Kailua, Hawai‘i 96734

FROM: Phyllis Coochie Cayan, History and Culture Branch Chief
Phyllis Coochie Cayan

Subject: HONOLULU 21: Cultural Impact Assessment (CIA) for the proposed McKinley High School Athletic Complex Master Plan Project, Honolulu Ahupua‘a, Kona District, O‘ahu Island. TMK: (1) 2-3-009:001 (por.).

Mahalo for the opportunity to comment on the CIA for the proposed McKinley High School Athletic Complex Master Plan Project at the above parcel. This is a heavily developed and impacted area since the building of the school and its surrounding facilities. However, there may have been more building above ground than below as was the standard then. Thus, the SHPD would caution the possibility of cultural resources beneath the surface. The history associated with the former Ward Estate (now the Blaisdell Center) indicated many water sources (i.e. auwai) that small canoes would access the mauka area as in the days of Chief Pawaa. There was cultivation of kalo and other crops before development in the general area. In nearby areas, there have been pockets of land (sand) where burials have been disturbed and eventually reinterred (some were pre-contact, others were historic burials). Certainly this ahupua‘a was used continuously by families/individuals going makai and/or mauka over the years for gathering, to access the shoreline, and for settlement purposes.

The department recommends you bring the project’s information to as many community forums as possible to reach the core families and/or individuals in the ahupua‘a who may be able to share mana‘o on any traditional cultural practices in the general area. This will entail creative outreach to gather mana‘o on cultural practices in such venues as follows:

1. The OHA newspaper “Ka Wai Ola” to reach folks who lived in the area.
2. Talk story with kupuna at senior centers (i.e., Waikiki Community Center, Lanakila Senior Center).
3. Talk story with Neighborhood Boards in Kalihi, Downtown, Ala Moana, and Waikiki.
4. Mr. Bill Souza, chairman and other members of the State Historic Review Board c/o SHPD
5. The SHPO union to contact retired police officers who recall the area use.
6. The Ward Family who once lived on the adjacent parcel (former Ward Estate).
7. Mr. Van Diamond, kupuna musician antiquarian@hawaii.rr.com

Any questions, please call me at 808-692-8015 or via email to me at Phyllis.L.Cayan@hawaii.gov

C: Theresa Donham, Acting Archaeology Branch Chief

Figure 29. SHPD response letter

PHONE (808) 594-1888 FAX (808) 594-1865

COPY

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD10/5259B

November 18, 2010

Mr. Brian Kawika Cruz
Cultural Surveys Hawai'i
P.O. Box 1114
Kailua, Hawai'i 96734

RE: Cultural Impact Assessment Consultation
McKinley High School (MHS) Athletic Complex Master Plan
Honolulu. Island of O'ahu
Tax Map Key: (1) 2-3-009:001

Aloha e Mr. Cruz,

The Office of Hawaiian Affairs (OHA) is in receipt of a November 10, 2010 letter initiating consultation ahead of a cultural impact assessment (assessment) for the proposed MHS Athletic Complex Master Plan project (project). It is our understanding the project will provide MHS students and community residents' access to high standard athletic and wellness facilities. The project will seek a public and private partnership with the YMCA. This will allow MHS to expand its services and facilities to students and the larger community. OHA has no comment specific to the above proposed project at this time.

OHA recommends that consultation be initiated with the Historic Hawai'i Foundation. Your letter mentions several buildings designed by the famous architect Vladimir Ossipoff. The Historic Hawai'i Foundation, a statewide organization, encourages the preservation of historic buildings, sites and communities relating to the history of Hawai'i.

We applaud your efforts to perform a cultural impact assessment. OHA does request assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be identified during ground altering activities related to this project, all work will immediately cease and the appropriate agencies will be contacted pursuant to applicable law. OHA would like to be notified and consulted if burials are found.

Please forward Kathryn Keala a copy of the draft assessment to review and provide additional comments. Thank you for initiating consultation at this early stage. Should you have any questions, please contact Kathryn Keala at 594-0272 or Kathyk@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

Figure 30. OHA response letter

Section 6 Interviews

Kama'āina and *kūpuna* with knowledge of the proposed Project and study area participated in semi-structured interviews for this CIA from November to December, 2010. CSH attempted to contact 20 individuals for this CIA report, of which 10 responded and 5 participated in formal interviews. Some interviews were supplemented with detailed information regarding the Kewalo Ahupua'a, taken from previous CSH interviews by the same participants.

CSH initiated the interviews with questions from broad categories such as *wahi pana* and *mo'olelo*, cultivation and gathering practices (on the land and in the water), trails, cultural and historic properties, and burials. Participants' biographical information, comments, and concerns about the proposed development, the Project area and the environs are presented below.

6.1 Acknowledgments

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana'o* (thought, idea, opinion) with CSH whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and not in any way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

6.2 Mrs. Suzanne Chun Oakland

CSH interviewed Hawai'i State Senator Suzanne Chun Oakland in her office at the Hawai'i State Capitol on 9 December 2010. Senator Chun Oakland was born in 1961 and has lived on Kunawai Lane her whole life. Her parents are Mei-Chih Chung and Philip S. Chun. Her family has lived in Hawai'i for the past five generations. Senator Chun Oakland and her brother and sister all attended McKinley High School. Since 1989 she has been a member of the Board of Directors for the McKinley High School Foundation and the McKinley Alumni Association. She is also serving as the Interim President for the McKinley High School Parent, Teacher and Student Association.

Regarding her familial connection to Honolulu and the area serviced by McKinley High School, Senator Chun Oakland recalls that her maternal ancestors were "Christian missionaries from China who actually taught Christianity to the plantation workers on the Big Island." Senator Chun Oakland's great-grandparents also helped to established churches in Hawai'i, including Saint Peter's Episcopal Church on Queen Emma Street. They settled in the Honolulu area. Senator Chun Oakland's maternal grandparents were a doctor and a nurse. Her grandfather was "the first Asian-American to go to Harvard Medical School." Her maternal grandmother and granfather lived on Kewalo Street. Senator Chun's father was the worked for the Kalihi YMCA for 27 years, of which he served primarily as executive director. Her mother was a social worker, who worked at the Department of Housing and Human Services. When Senator Chun was in High School her mother worked in a pre-school and later in the public library system. Senator Chun Oakland has one sister and one brother: both are McKinley High School graduates.

When she thinks of the *ahupua'a*, Senator Chun Oakland remembers that,

> Many immigrant groups actually came and settled in that area. And as their families grew, their children grew up and then they started to live throughout the rest of the State. It seems like this is the starting ground for many people. However, this is also very significant with the valleys, Nu‘uanu, Pauoa, all of that area. There’s all the *pu‘u*. There are the royal families residing in the valleys, including their summer house in Nu‘uanu Valley. You have some of the significant wars that took place. So, you will find many skeletons from that period of time…. Fred Cachola and other *kūpuna* could share the stries of these areas and the people. In Liliha area and School Street area, there were rice patties and taro patties. So, everything is clay soil. This is an area very fertile for growing things. McKinley [High School] had a wonderful agricultural program. I understand that long ago, through the films I saw at school, that part of the days was working on agrcultural farms. They actually helped with the farming. And I know that a lot of us want to go back to that so that our children have that experience again and work toward sustainability.

Senator Chun Oakland recalls clubs at McKinley High School including the Future Farmers of America, as well as a robust agricultural program. While she was a student at McKinley High School, these clubs and the agricultural program “just did planting on the school site. My understanding before is that they used to go to the farms and be able to take care of the farms. That was part of the curriculum.” Senator Chun Oakland suggests talking to others who would know more about the agriculture programs, including teachers, such as Mr. Alvin Nip, Mr. Kusunoki, and Ms. Bobbi Kakuda. Senator Chun Oakland also suggested that Senator Inouye and Governor Ariyoshi may know of these agricultural practices (due to time constraints, CSH was not able to contact these individuals for this report).

While Senator Chun Oakland does not recall any *mo‘olelo* of the *ahupua‘a*, she remembers many stories specifically related to McKinley High School: “If you look at McKinley’s history, we have very consistent traditions: the Black and Gold Day. We used to have a carnival for many, many, many years. We were one of the few public schools that had a full-on carnival like that.”

Regarding the history of McKinley High School, Senator Chun Oakland clarifies that, “I recall activities programs that were going on when I went to went to school.” During her years at McKinley, she does not remember gathering *limu* or fish in the area: “Not at McKinley when I was there. I don’t know about a long time ago. I wouldn’t put it past McKinley [High School] to have done that. Because as a school, [McKinley is] very connected with the community and encouraging their students to excel in every way possible. If you look at our Code of Honor, it embraces the standards by which we are to conduct ourselves…. Even the oval around the McKinley Statue is steeped in tradition. You never step on it until the day you graduate, and only on the day you graduate. So, anybody, whether you are visitor, student, teacher, you never step on that…. out of respect.”

Senator Chun Oakland recommends that, since her generation did not learn “whether there were existing fish ponds in the area, gathering practices, we didn’t have any of that shared with us. But I think, maybe old timers, like Senator Inouye and their generation, may know.” Senator Chun Oakland thus describes the culture of McKinley High School:

> McKinley has always had a very diverse population of people, so we celebrated culturally. We had a May Day program during the day and in the evening. And we had all the students share their cultural practices, whether it was games, food, different kinds of dances, song. So, I don’t know if there has been that kind of continuation for these programs. But I know that when I was there, I really wanted to celebrate the diversity of our cultures there. You had over 3,000 teachers because every student was a teacher for me, personally…. What have been associated with McKinley [High School] are the beautiful grounds that we have. The historic buildings that we were able to preserve. So, I really hope that kind of ambiance is kept. And I know that the gentleman who did the architectural work tried to look at the specialness of the buildings and integrate it into this new facility. I think that generally, the openness of the campus, being accessible to the entire community, is a feeling that I hope will be preserved—not this feeling of being in prison. Some schools are fenced off all over the place. I know there are safety issues, but I hope that we can keep that, as well as the landscaping, beautiful canopy trees. I notice that the grounds are getting very brown near the bus stop at Pensacola and King (streets). Maybe we should do a campus-wide beautification to help restore some of those areas…. Similar to the capitol, very open feeling, I hope that’s kept.

6.3 Ms. Pi‘ilani Kaopuiki

CSH interviewed Pi‘ilani Kaopuiki on 26 November 2010 at Wai‘oli Tea Room in Mānoa. Ms. Kaopuiki was born in Honolulu on 8 October 1944. She grew up in the McCully area of Honolulu and has lived in the same house her whole life. Her mother was Helen Kaniniu Hart Kaopuiki. Her father was David Ka‘aimano Kaopuiki. Ms. Kaopuiki is a retired federal employee and attended McKinley High School.

When asked about her memories of McKinley High School and the area where she grew up, Ms. Kaopuiki explained that, “McKinley High School served a working class community. My area was a residential neighborhood built in the forties, on swampland.” Ms. Kaopuiki described the large area that McKinley serviced, since it was one of the earliest schools in the “Territory of Hawai‘i,” as Hawai‘i was known in those days.

Ms. Kaopuiki remembers that McKinley High School was known as “Tokyo High” because “the student population was predominantly Japanese from its early days through to when I attended McKinley.” She explains, “Public schools … have areas of responsibility. For instance, I’m Hawaiian. Well certainly I’m a minority living in the community where I live because most of the [urban Hawaiian] people came from Papakōlea. So, the people around me used to be Japanese and Chinese people, in my community.” For Ms. Kaopuiki,

> The culture of my area is ‘local.’ I’ve always stated that because if I went to my neighbors’ house to visit, it was probably a Japanese house or a Chinese house. And we ate simple American food. Or if someone had made sushi. I was lucky enough to share in the sushi. I remember eating Chinese [food], so I would say that my culture was—my developing culture—was local, rather than ethnic…. So,

> I grew up eating all kinds of food—except hot. And listened to all kinds of music. And I went to Bon Dances. And did different things.

In the area near McKinley High School, Ms. Kaopuiki remembers hearing of a pond on the Ward Estate and she saw a creek that ran near what is now the Blaisdell Arena. She also remembers hearing stories of rice paddies in the area.

Ms. Kaopuiki remembers trees in the area *mauka* of McKinley High School. When thinking back to the late-1950s and early-1960s, she describes a close-knit community that has changed: “the warmth and welcome has gone: evaporated.” She explains that, “Now they have towers next to McKinley High School.” She recalls that, in the past, “People walked to school. We caught the bus. Students catch the bus now. Kids back then got to know each other and spend time with each other more…. When you walk more, you see what’s in the area. Today, when you drive more, you just jump in a car, and you’re off.”

Ms. Kaopuiki did not know many Hawaiians at the school, though they comprised roughly one-sixth of the student body. Realizing that Hawaiians were mostly in choir and swimming, she exclaimed, “I shoulda joined the choir because Hawaiians sing.” Many of the Hawaiians at McKinley High school came from “Palama-side,” near Kalihi. Ms. Kaopuiki explains, “I always hung around with the people I was in intermediate school with, which were not Hawaiian.”

Describing the culture of McKinley High School, Ms. Kaopuiki recalls the clubs, “Speaking of the culture of the school, there were in those days social clubs—and usually they were affiliated with the YMCA or the YWCA. And then they had other things like debate clubs and key clubs and other clubs, I guess, for all the kids headed to higher education.” She clarifies that:

> For the kids, status came with ROTC [Reserve Officers' Training Corps]. If you were an athlete you probably had a good position in ROTC. And, of course, girls in those days were called sponsors. It’s junior ROTC because it’s high school. And the higher ranking officers had women on their arms, called sponsors. And so it was quite a thing to be a sponsor. And if your officer happened to be an athletic star, hey, even better.

Ms. Kaopuiki does not know of gathering practices near McKinley High School, “because the area was developed already.” Gathering took place “up in Makiki and Tantalus.” Ms. Kaopuiki remembers her club at school made *plumeria* lei for the graves at Punchbowl Cemetery, from the many plumeria trees near McKinley High School. Many homes had mango trees, avocado trees, breadfruit trees, guava trees, lychee trees, and flower trees, including plumeria trees. According to Ms. Kaopuiki, “Back then it was just simple, because people did backyard leis. They didn’t go to a florist to get something that was fancy. And people didn’t make fancy leis. It was really simple. I don’t know that I saw *lei po‘o* (*lei* worn on the head) as a common kind of lei like you do today.”

As far as fishing in the area, Ms. Kaopuiki heard of net fishing and pole fishing near Ala Moana and the Kewalo Basin, fishing from the shoreline and in boats.

Ms. Kaopuiki remembers hearing stories about 7 December 1941: bombs were dropped near her house, on King and McCully. She recalls stories of blackouts and the covering of windows during that same time period. Although Thomas Square is across King Street from McKinley

High School, Ms. Kaopuiki does not remember having any events at this famous park. She also remembers that, while some schools had cultural clubs, McKinley High School did not:

> Saint Andrew’s Priory had Hui Hau‘oli, where Hawaiian girls could meet…. But I don’t remember that McKinley High Schools had any ethnic clubs…. You would think that if there was a cultural club—that was going to put on some kind of presentation of ethnic something, the space that they could use would be Thomas Square—because it’s not necessarily school related…. Thomas Square was so close by McKinley, if a group wanted to do something … but they never did, as far as I know.

Ms. Kaopuiki explained that at McKinley High School, students were not taught about the history of Thomas Square or the history of the school: “strictly academic.” She recalls a dearth of knowledge about Hawai‘i and the area:

> I don’t remember any session on local history, or even area history…. I never knew that the circle in front of the [McKinley] Statue is supposed to be sacred. I don’t believe that that’s true because we never learned that it was sacred…. Sacred ground, which the statue is standing on— that only McKinley High School people, could walk on it, or whatever—I never heard anything of the kind…. I’m sure that people just crossed over it wherever they were going to class…. No restrictions…. This was in the sixties, now…. It took until 2000, or whatever it was, for somebody to climb up there and see what that thing said, that scroll [on the McKinley Statue] said. I was never interested to go look at it. I don’t think I ever looked at the man…. I don’t remember any discussion about who this man was—in relationship to anything.

Regarding the future plans for McKinley High School, Ms. Kaopuiki explains that:

> I always think of “sense of place.” There’s this term whenever there’s any kind of huge development to keep in mind the sense of place—even though we’re losing it quickly. But I think that if planners incorporate “sense of place” when they build, gradually it may start to look like Hawai‘i. People build their modern boxes, and there’s no sense of place in the modern box—like the two towers that are sitting next to McKinley High School right now. But I noticed from the plans that the buildings are low-rises. So they could construct things with a sense of place, and a design so that it looks like it’s in Hawai‘i, rather than Anyplace U.S.A. And my hope is that they will incorporate native plantings. You’re going to have plantings—then use native plantings because we have them available now.

Ms. Kaopuiki saw McKinley High School’s lack of cultural significance as the primary trait of the school:

> To me, the cultural significance of McKinley (High School) is that it doesn’t have any Hawaiian culture in its physical plans now. It looks like wherever it came from… someplace in Europe. But I think if the designers use techniques that allow for the use of our trade winds and allow for open windows if they need

> to…. So, a sense of place means that you recognize that we have trade winds, and try to use that in the design. That's the sense of place. I've been to some places that as soon as you get off the airplane, and you see the buildings, you know that you are in someplace different because their designs speak of where they are: Sāmoa. It's hard if you are in a city. But these people have an opportunity, especially since they're not going to build towers, where towers have to meet certain conditions, they can design so that there's a sense of being in Hawai‘i.

For Ms. Kaopuiki, this sense of place requires a sense of history. She explains:

> This school is named in honor of someone whose place in Hawaii's history is not one of pride. Wouldn't it be nice if it was decided that, because the school is an educational institution and should represent truth, that President McKinley doesn't deserve such honorable recognition—here in Hawai‘i anyway. The name of the school should be changed and the statue removed. President McKinley hurt Hawaii—and even started a movement that helped to destroy Hawai‘i—from the jewel that it is in the ocean…. The statue is the symbol of the person who is being honored and he doesn't deserve it. What we are learning today is the true facts of his actions toward Hawai‘i…. the facts of history and the development of Hawai‘i are recorded. How does he relate to the culture? McKinley holds a false place of honor in the facts and culture of Hawai‘i, culture meaning that certain things happened in Hawai‘i as a result of his actions with the false annexation that affected the people and how they lived then until today. Acts in history develop culture. The things that happen in history develop culture. And so his place in the development of Hawai‘i only hurt Hawai‘i and its people. It's dishonorable to have the name continue on that school while our people know the truth now.

6.4 Mr. Lopaka Kapanui

Mr. Kapanui, who was raised in Kalihi and Wai‘anae, learned numerous *mo‘olelo* of Honolulu, Waikīkī, and throughout O‘ahu from his mentor, renowned Hawaiian history and folklore storyteller, Glen Grant. After Mr. Grant passed away in 2003, Mr. Kapanui has carried on his legacy of ghost tours of Honolulu through the company Mysteries of Honolulu. Mr. Kapanui, who has written two books covering ghost stories in Hawai‘i, gathers historical information from archives, collects personal accounts through interviews, and recollects stories passed on by Mr. Grant. From this research and experience, he shares with the community narratives that incorporate the historic background and origins of the stories, paranormal accounts, and cultural belief systems in Hawai‘i. Mr. Kapanui was interviewed on 15 December 2010 at Ezogika Noodle Café in Honolulu.

Heiau and other Places with Spirits

According to Mr. Kapanui, Hawaiians traditionally dedicated newly constructed heiau to the war god Kū and other primary male gods and christened special events with human sacrifices. For example, when Kamehameha dedicated Pu‘ukoholā Heiau to Kū in order to ensure the unification of the Hawaiian Islands, he invited his cousin and chief rival, Keoua, to the

dedication. Keoua was killed by a spear on a canoe before entering Kawaihae Bay. Yet Keoua, in his foresight, had previously circumcised himself on the canoe so that his body would not be intact for his fated sacrifice, and this lessened the impact his sacrifice would have on Kū and the ambitions of Kamehameha. High ranking *ali‘i,* such as Keoua made exceptional sacrificial victims, but usually sacrifices came from the kauwā. Members of this lowest caste would flee at the sound of blowing conch shells and beating drums, which signaled the need to capture a sacrificial victim.

Mr. Kapanui remembers that his mother, who worked in the Kalihi Poi Factory, described the Kaka‘ako area as a place of coral flats, landfill, and dumps. He relates a story of sacrificial drowning that occurred in Kaka‘ako (Kewalo). Kānelā‘au Heiau, a sacrificial heiau, was once located on the slopes of Punchbowl Crater at the current location of Stevenson Intermediate School's cafeteria, and another pond use for drowning located near the former coastline at the Kawaiaha‘o Church. Two areas were used to drown victims by strangulation so that the victim's body would remain intact without excessive blood and bruises. The sacrificial drownings took place at the waters of the Kewalo Basin and an inland pond located at the Blaisdell Center. Although he cannot remember the name of the heiau, Mr. Kapanui recalls that the name referred to "the man who sleeps."

Mr. Kapanui first went to McKinley High School to attend a graduation ceremony. There was a very strong energy emanating from the area, and it made Mr. Kapanui feverish and out of sorts. He later returned to McKinley to see if there were any electric lines that might have caused the feeling but there were none. In 1999 Mr. Kapanui was told that there had once been a heard sizable heiau where the auditorium is now located. Mr. Kapanui was also told that the auditorium was haunted. Although he was not told the details of the haunting, he was told a story about a production of Jesus Christ Super Star in the 1970s. There were many problems going on while the play was in production—one cast member put a curse on another cast member.

According to Kapanui, there may also be another building on campus associated with spiritual activity. While in school at McKinley in 1986, Mr. Kapanui's friend, a Hawaiian woman now working downtown, remembers that surrounding this building was always the scent of *kukui* nut burning, the aroma of flowers that do not grow in the area (he mentioned *pakalana* and another plant). Mr. Kapanui also mentioned that this person heard conversations in Hawaiian language, though no one was there.

Mr. Kapanui also recalls that, "There was some controversy about the statue in front of the auditorium. That the document had something to do with—something that really wasn't what it was all about—something to do with the overthrow."

Other stories describe numerous deaths in historic times. In the 1850s a smallpox epidemic ravaged Hawai‘i. Under neath the old Kaka‘ako Fire Station, the smallpox victims were buried on top of each other. Older firemen have shared their experiences with Mr. Kapanui of the fire station. They asserted that the building was haunted, as several felt intense weight on their chests as they slept, as if someone was sitting on them. In addition, Mr. Kapanui learned from the late Mr. Grant that the Kawaiaha‘o Church cemetery could not accommodate all the smallpox victims, so over 3,000 people were buried in a mass grave underneath land near the former coast, now a parking lot at Restaurant Row.

Gathering Practices

Mr. Kapanui’s maternal grandmother, originally from Kailua Kona, lived in Papakōlea and shared stories of gathering practices that used to occur in the area. People would gather limu for healing purposes at the Kewalo shoreline. She remembered a certain type of black *limu* no longer around because of development. This variety of limu had dual purposes that could be used for healing or poisoning the body depending on how the *limu* was administered and prepared. In the healing form, the *limu* acted as *noni* and flushed the body of toxins. The *limu* was either left out to dry or taken fresh, however, Mr. Kapanui’s grandmother could not recall which method of preparation caused which response in the body.

Mr. Kapanui also remembers a family who lived on Kaululā‘au Street, in the hills of Papakōlea, recount that whenever they would eat certain foods from the uplands, there was always something from the ocean that accompanied the meal as a garnish. The family would trade *pua‘a* and a particular variety of *kalo* for fish with people from the *makai* area of the *ahupua‘a*.

Night Marcher Trails

Night marchers (*‘uhane hauke‘e*) are spirits who traverse the land during the night,, usually along specific paths. There is a night marcher’s trail that goes through the Strode Wing of Straub Hospital, toward the police station, and through the graveyard located next to the old TGI Friday. Employees at Channel 4 news have also mentioned hearing and seeing children run around while they are filming. The Bus had to close down the stop by the graveyard because people were hearing their names in broad daylight. A police officer once saw a woman sitting at the bus stop outside the graveyard waiting for the bus she stood up as the bus approached she watched the bus doors open and close and the as the bus left she walked through the end of the bus. Just then he saw a bunch of Hawaiian men with torches coming across South King walking toward the graveyard. Mr. Kapanui thought that this story was particularly interesting because it suggests that the night marcher trail may originate from the graveyard. Most stories, however, say that the trail stops at Pūowaina. Makia Malo, a friend of Mr. Kapanui, knows of a trail leading through ‘Auwaiolimu, Kaulula‘au, around Pūowaina and down Stevenson Intermediate towards the ocean. Many people have also seen the trail going up the Papakōlea side of Punchbowl.

Community Concerns

Mr. Kapanui recommends determining if there actually was a *heiau* located at the auditorium and if so, what was the heiau was used for. Although Mr. Kapanui has heard there was a heiau there, there could be something else associated with that place that is responsible for the adverse effects Mr. Kapanui and others feel when going there.

Mr. Kapanui recommends speaking with Makia Malo who grew up in the area.

6.5 Charles Kapua

Born in 1942, Mr. Charles Kapua is a retired U.S. veteran. As a child, he lived in ‘Ālewa Heights and Kalihi, until age ten, when his family moved to the ‘Ewa-side of the island. Throughout his childhood, Uncle Charlie, as Mr. Kapua is known, helped his grandfather, John Kapua Sr., who owned Kapua’s Hawaiian Food in the Ala Moana Fish Market (currently the Ward Farmers Market). Kapua’s Hawaiian Food was on the Diamond Head side of Haili’s Hawaiian Food. As a child, Uncle Charlie was a “go-fer” at Kapua’s Hawaiian Food, running errands and making deliveries. CSH interviewed Uncle Charlie at Kenny’s Restaurant in Kalihi on 13 December 2010.

In 1949–1950 Kapua’s Hawaiian Food had moved to Ala Moana Market from Kekaulike Street and would end a few years later. Uncle Charlie remembers the businesses at Ala Moana Fish Market being a community and that there was not a competitive spirit amongst them. If his grandfather did not have a certain product the customer wanted, he would direct them to the other vendors. Kapua’s Hawaiian Food was the first food vendor, followed by Haili’s Hawaiian Food a year later, then Bob’s Market a few years after them. The Market had an open front. Haili’s was half of the area, with Kapua’s a quarter and Miyakawa Fish Market in the other corner. Across the way was Harimoto’s Fish Market.

Uncle Charles also spoke of the place names of the Kaka‘ako area. He said that the term Kaka‘ako is well understood, and that some of the new names—even for surf spots—did not exist when he was growing up. People just said Kaka‘ako and then mentioned the street or the precise place. Place names were simpler then.

The Ward sisters would regularly order Hawaiian food from Kapua’s. They would call Uncle Charlie’s grandfather and order “the regular.” Their order was usually one pound of dry *aku*, one to two five pound bags of *poi* (pounded taro), 3 *laulau* (*ti* leaves containing pork, beef, salted fish, or taro tops, baked in the ground oven), one pound of kalua pig, *ake* (liver) and *‘opihi* (limpets). He would help his grandfather deliver the food to the Ward Estate, an old style plantation home next to McKinley High School. Uncle Charlie would rarely travel through the school. When he reached the Ward Estate, Uncle Charlie was told to place the food on the steps and his grandfather would take it in. He describes the Ward Estate home as large, low and spread out. The land was marshy with many coconut trees and peacocks walking around. Uncle Charlie remembers his grandfather having a lot of *aloha* (love, respect) for the Ward sisters and would rarely see the Ward sisters pay his grandfather.

His grandfather taught Uncle Charlie how to cook Hawaiian food. His grandfather would stress that everything needed to be clean, since he was the former Health Inspector for Food. Uncle Charlie recalls his grandfather teaching him how to prepare a fish to make *palu* (a relish made of the head or stomach of a fish). Uncle Charlie would clean the fish. His grandfather would take a pinch of the fish and if it wasn’t clean he would throw it out. He also remembers his grandfather giving him a slap if he did not clean the sides of the poi bowl. At first, his grandfather had an *imu* (underground oven) for *kālua* pig (pig baked in an underground oven), but eventually it became too time-consuming and he would buy the *kālua* pig from various meat departments and vendors.

Uncle Charles Kapua remembers various plants that were gathered from the *ahupua‘a* near the Project area. For the *imu*, they would collect banana stumps. He also remembers collecting

and drying *kōko‘olau*, for tea. This plant was collected in many places, even on the streets in Kaka‘ako. He would collect the plant, pulling it out by the roots. The *kōko‘olau* was then dried by hanging it by the roots. Later, the leaves were used for tea.

Uncle Charles also gathered *wiliwili* berries at Thomas Square and the nearby area. As a child of eight or nine, he was taken to Tomas Square, given an empty mayonnaise jar, and asked to fill the jar with seeds. It took several hours to fill the jar. These seeds were then used for seed *lei*.

Uncle Charlie’s grandfather taught him to make *ake*, or calves’ liver. He would first pull out the liver from the carcass. They would feed water through the opening, draining all the blood out. It would take 1–1 ½ hours to do so. Then he would cut the grizzle and veins out, which would take 2 ½ hours. If his grandfather saw some grizzle or veins in the liver, he would force Uncle Charlie to eat it raw to illustrate how the consistency was unpleasant to eat. Once the grizzle and veins were cut out, Uncle Charlie would cut the meat into ½ inch cubes. The meat would chill overnight and continue to drain. The next day, he would chop *huluhulu waena limu* The seaweed was hair-like, red and would bleed when cut. He would also add salt to taste. He would mix everything together until the consistency was evenly distributed. If one were to taste the liver, the salt and the limu flavor would be present. Uncle Charlie said it was an acquired taste, but there was a large demand for it. If there was a food Uncle Charlie didn’t like, his grandfather would feed him bowls and bowls of it, until he acquired a taste for it. The *ake* cost 50 cents for a small bowl. *‘Opihi* was 50 cents a plate. He also remembers not being allowed to mix the *aku palu* as a child. He would clean the *aku* head, but his grandfather and father would chop everything up. He wouldn’t be allowed to ask questions, but learned by watching.

Kapua’s Hawaiian Food was open 7 days a week and on Sunday they were open until 1:00 P.M. He remembers on Sunday there were 1–5 boards on the floor and they would clean under the boards. The area for their business was very small, maybe only half the size of Haili’s Hawaiian Food stall. Uncle Charlie was the only one of his siblings and cousins to consistently help his grandfather at Kapua’s Hawaiian Food.

His grandfather on his mother’s side had a sampan boat that would go out to catch fish in Kewalo Basin. They would catch *aku*, *‘ōpelu*, *akule* and other fish. When asked if he remembered the names of the *aku* boats, he remembered the Yellow fin *aku* boat. If all of the tasks at Kapua’s Hawaiian Food were finished, he would ask his other grandfather if he could fish at the pier. Sometimes his grandfather would ask him to help the fishermen with the sampan boat. He would be disappointed, but would have to do what his grandfather said.

One of the most important aspects that he remembers about Hawaiian culture is the notion of inclusiveness. Uncle Charlie tells of his grandfather on his mother’s side, where, if someone is standing outside a party—whether rich, poor, or whatever—his grandfather always invited that person into the gathering and made that person feel welcome. This inclusiveness was something Uncle Charlie’s grandfather felt very strongly about. Uncle Charlie’s grandfather also believed that it was very important to express gratitude to someone who is generous. Uncle Charlie explains that, if someone ever gave his grandfather some food, he would not eat one bite until he had thanked the person who gave the food. This is how Uncle Charlie was taught. It was a matter of respect for others.

During the summertime, Uncle Charlie would go to southern Kauai and live with his grandfather’s friend he called “Pops” for 6–8 weeks. He would help collect salt in the salt beds.

First, he would scrape and clean the ground. About 4 inches of soil would remain. He would fill up the water slowly, about 1–1 ½ inches of water to fill what you cleaned. Each bed was about five feet by ten feet with pathways in between. After waiting for a few days, he would clean the bed and take out the salt, leaving a thin layer behind, not the salt that was touching the dirt. Then he would refill the bed with water. To make red salt or *alae*, you would add a little dirt. Uncle Charlie remembers it as hard, tedious work and had a much better appreciation for salt after working in the salt beds.

He learned Hawaiian culture, traditions and values from both sides of grandparents. He remembers if he didn’t ask for something, like candy, his grandfather would get it for him. If he asked for it, they wouldn’t give it to him.

Uncle Charlie’s mother’s mom, Elizabeth Mahelona-Ho‘opi‘i originally from Maui, was gifted in *lomilomi* (massage) and *la‘au lapa‘au*. She lived in Ka‘a‘awa on the windward side of O‘ahu. He remembers being torn over which grandparent to help during the summer because he was the only one who would do so all year. He remembers raking the leaves of a *kamani* tree, sorting the leaves and the nuts and cleaning a sweet potato patch. He would work all morning and a little after lunch, then go to the beach after he ate.

He would learn by watching his *kūpuna*. They didn’t verbally express “I love you” to him, but he knew. They would only hug him when he first got to their home and when he would leave.

He remembers his grandfather waking him up early one morning, around 3:00 A.M. His grandfather took him to the auction block at ‘A‘ala Park, a market with all kinds of seafood. There would be other food vendors there from Harumoto’s, Bob’s Market, Jimmy’s Meat Market, etc. To take it back to Ala Moana Fish Market, they would either load the car with the fish or it would be delivered.

Uncle Charlie would rarely go to the Kewalo Theater, but remembers spending a lot of time at Mother Waldron Park. He would play touch football and 5-hole marbles. He met John Fujieki of Star Market there as a kid. The older kids would go to Mother Waldron Park later in the afternoon. He would have to be back at his grandfather’s restaurant by 12:30 for lunch every day.

He lived at the time in ‘Ālewa Heights on Puna Street. His grandfather owned four properties from Kapua Lane up to Kuakini Hospital. His grandfather eventually sold the land to Kuakini Hospital.

Uncle Charlie shares that the Ala Moana Fish Market provided a place for people all over O‘ahu to meet and share ideas. They were joined by the commonality of food, but also talked story, shared news and ideas. He asks, “Why should they knock it down?” as it is a part of Hawai‘i’s history.

Regarding the Project, Uncle Charles recommends building structures that match the architecture that exists at the school. He also recommends that the truth regarding the McKinley Statue be addressed: “If not now, then when?” The statue holds a document, and the words on the document are “Treaty of Annexation.” Uncle Charles believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. He believes that if work is to be performed as part of a master plan for McKinley High School, then the past

needs to be corrected. He does not believe this is a matter of rewriting history, but instead honestly portraying the truth of history. He also believes that a plaque is more respectful and less costly than taking down the statue and fixing it.

6.6 Unnamed Participant

CSH met with a *kama‘āina* of Kaka‘ako on November 29, 2010. The respondent asked to be a confidential participant in this CIA. The interview, combined with sections of a previous CSH interviews (Genz and Hammatt 2010), reveals extensive knowledge of the ocean and wetland resources of Kaka‘ako and plant gathering in the Project area. She also provides a window into the life of the diverse ethnic neighborhoods of near McKinley High School.

The participant was born 1942 in Honolulu. The participant’s family lived in a two story home in Kaka‘ako on Waimanu Street at site of the current Imperial Plaza condominium. She moved to Nu‘uanu in 1952 when the industrialization of Kaka‘ako began.

This participant’s grandmother—who spoke Hawaiian language and shared her knowledge of medicinal and agricultural plants, seafood, and Hawaiian customs, such as the *lū‘au*—greatly influenced this *kama‘āina*. One story related by the participant connects her grandmother and mother to a Hawaiian oracle, or *haku*. When the participant’s mother was four years old, the village seer, Uncle Ka‘ai, visited the family and reminded them of a prophecy he proclaimed at the mother’s birth. A birthmark on the mother’s foot foretold that she would travel throughout the world, and he poetically named her Pūpū, a shell that was destined to see all the seashores of the world. When the participant’s grandmother contracted cancer five years later, her husband—the participant’s grandfather—sent her to relatives in China, as the village herbalists knew how to treat the disease. This started to fulfill the prophecy, as the participant’s mother also made the voyage to China. En route she befriended a Chinese boy, whose father was the galley chef, and as a result she and her mother ate well during the voyage. One event formed a lasting impression on the participant’s mother—the mother spoke with ease in Hawaiian to another Chinese woman in China. The participant recalls that even during childhood, many people often crouched low in the presence of the participant’s grandmother out of respect.

This *kama‘āina* recalls that the Kaka‘ako neighborhood of her childhood housed several distinct ethnic groups, including Japanese, Portuguese, Filipino, and Chinese immigrant families. A Japanese family owned a store nearby, and her Japanese neighbors lived in a redwood house, complete with their own *furo* (wash room) in the house, which was unusual for the time, as most Japanese families used a public bathhouse. While Portuguese families lived on Ward and Kawaiaha‘o Streets and celebrated the Holy Ghost festival with parades, Filipino families often sat on the participant’s porch during these events. The participant also remembers a Chinese man who sold *manapua* (Chinese-style steamed buns filled with meat), pork hash, and *pepeiao* (Chinese [dumpling] stuffed with meat) in the neighborhood, and she secretly ate their Chinese neighbors’ mangoes. This *kama‘āina* remembers that the different ethnic groups mingled with each other even though they lived in discrete neighborhoods.

As a child, the participant would use McKinley High School to enter the Ward Estate, where a family aunt was a caretaker. By this time the estate was already dilapidated, and children

wondered if there were ghosts there. When the children entered the Ward Estate, they did not stay long.

The participant remembers hearing stories from adults about bombs dropping on the McKinley High School grounds during the famous December 7, 1941, raid. This participant was told that, at first, people did not realize that Japan’s attack on Pearl Harbor was a real raid—until the bombs started dropping near the school. Following the Pearl Harbor attack, all families in the area had a bomb shelter in each yard.

This *kama‘āina* remembers that, when she caught the bus to go to Maryknoll School, McKinley High School had a “nice green field where the football team used to practice.” As far as she remembers, “A lot of the people who went there [McKinley High School] were Asian. Japanese and Chinese people went to McKinley.” For this participant, the school buildings “blended with the environment. It wasn’t obtrusive. And they always kept the grounds nice, the trees and everything else.” Though never a student McKinley High School, this *kama‘āina* often practiced volleyball in the school gym, once she had entered the business world, through “a professional business league.”

This participant remembers the land *mauka* of the Ala Moana Beach as primarily marshes. The land was very spacious with very few residences. There she collected medicinal herbs with her grandmother who practiced *lā‘au lapa‘au*. They collected *‘uhaloa* for sore throat. They also gathered castor beans for treating chicken pox and skin problems. They boiled the beans and the ailing person bathed with them. Her grandmother also grew guava and picked the young shoots for diarrhea. They also collected a small crawling plant, similar to aloe but without thorns, at sandy areas to mend broken legs. They mashed it, urinated on it, and placed it on the broken leg. For asthma, they mashed *pōpolo* leaves and steamed them in *ti* leaves with a little salt. The asthmatic person chewed and swallowed this mixture with a spoonful of *poi*. If she were becoming sick, she received a water enema and drank *māmaki* or guava tea. For healing, the participant also sat on a chair with a bucket of boiled herbs under them. Covered with a blanket, she smelled the boiled herbs, sweated, and finally slept.

As a child, she gathered plants at McKinley High School. Along the perimeter of the school, her grandmother would collect *uhaloa*, which was used for sore throats: “You cleaned the root real well and you made a tea out of it. And that was used for sore throats and colds.” She explained that, “You pulled the plant out of the ground and the roots were cleaned, and then they were boiled. And then you used it as a tea: not the leaves, the tea from the roots—not the leaves.” This participant also remembers *laukahi* as one of the plants that grew at McKinley High School. According to this participant, the *laukahi* was pounded and used as a poultice, as well as for other things. While the *laukahi* plant remains at McKinley High School to this day, this participant did not see the *uhaloa* the last time that she visited the school. According to this participant, McKinley High School also had mango trees.

This participant gathered *limu* with her grandmother on the shores of Ala Moana Beach, including *limu ‘ele‘ele* , which was used to enhance stews, and a kind of limu that grows on *‘opihi.* In addition to the knowledge of medicinal plants and *limu*, her grandmother had the best reputed garden in the area. Neighboring women often stopped by her garden before church to

gather flowers and plants for their hats. Large baskets of *laua‘e* ferns hung from the rafters above the porch.

This participant also shares fond memories of fishermen in the area. As a child, she learned to swim in the near harbor at Kewalo Basin, and often ran on the piers without any moored *aku* sampans. She fished in the harbor and caught several kinds of reef fish, including ‘aweoweo, *manini*, *opelu*, *‘aholehole*, and *‘ama‘ama*, and squid. Several of her uncles were *aku* sampan fishermen at Kewalo Basin. After selling their catch at the fish auction, they divided any extra fish amongst themselves and shared it with their families. They also dried the fish and squid. She remembers that, while not fishing, her uncles and other fishermen repaired their nets, cleaned the boats, and talked story.

What this participant remembers most about McKinley High School is Voting Day and the events that occurred in the mall near the McKinley Statue:

> The best thing about McKinley [High School] was Voting Day! How could I forget that? Oh, that was an all-day affair. My grandmother would pack lunches for us, and we bought orange sodas, which tasted so good in the hot sun. And we took our *lauhala* mats to sit under a tree. That was the best day for kids because we would run around the booths to watch the excitement. And they had these voting cards, like you have baseball cards today, but all of the candidates had their picture on them. And we would run around and gather them to see who could get the most cards to take to school. We exchanged the cards with the other kids for the more popular ones. That was the best thing! We loved that!

According to this participant, booths were assembled around the main mall, and each candidate had a booth, or section, “where their supporters went.” This participant explains that many Hawaiians participated: “It was a fun time! It was my grandmother that took us there. And my grandfather wore his lauhala hat with peacock feather lei on it. He always wore this hat to special occasions. He made that *lei* and was so proud of it. Everyone was there. All the neighborhood kids and their ‘*ohana.* So, it was like a Fourth-of-July–type of family affair.”

As for recommendations, this informant explained that,

> I think that the way it [McKinley High School] looks now is terrible. It’s unfinished. So, they need to do something to preserve that school. They don’t have any school buildings like that anymore. The architecture itself is something that we should preserve…. But the grounds could use some work…. I hope they keep the Hawaiian flavor too—and not be so sterile…. I think the plantings and grounds should blend with the style of these stately buildings.

Section 7 Cultural Landscape

Discussions of specific aspects of traditional Hawaiian culture as they may relate to the Project area are presented below. This section integrates information from Sections 3–6 in order to examine cultural resources and practices identified within or in proximity to the Project area in the broader context of the encompassing the Kewalo landscape. Excerpts from interview sessions from past and the present cultural studies are incorporated throughout this section where applicable.

7.1 Hawaiian Habitation and Agriculture

Senator Oakland-Chun, in her interview, stressed the importance of agriculture at McKinley High School. Senator Chun Oakland recalls clubs at McKinley High School, including the Future Farmers of America, as well as a robust agricultural program. While she was a student at McKinley High School, these clubs and the agricultural program “just did planting on the school site. My understanding before is that they used to go to the farms and be able to take care of the farms. That was part of the curriculum.” Senator Chun Oakland explains that,

> This [area near McKinley High School] is an area very fertile for growing things. McKinley [High School] had a wonderful agricultural program I understand. I’ve seen films…. Part of the day of McKinley students was agriculture. They actually helped with the farming. And I know that a lot of us want to go back to that so that our children have that experience again and work toward sustainability.

This hope for more sustainability seems to be rooted in the cultural values of the area. McKinley High School was particularly important for the first and second generation descendants of sugar plantation immigrant workers, and more than half of the student population was composed of students of Japanese descent in the 1930s (Odo 2004:76). Teaching agriculture appears to have reflected the lifestyle of the families whose children attended McKinley High School.

Ms. Kaopuiki describes a “working class” agricultural element as part of “local” culture. Ms. Kaopuiki explains that, “McKinley High School served a working class community. My area was a residential neighborhood built in the forties, on swampland.” She explains, “Public schools … have areas of responsibility. For instance, I’m Hawaiian. Well certainly I’m a minority living in the community where I live because most of the [urban Hawaiian] people came from Papakōlea. So, the people around me used to be Japanese and Chinese people, in my community.” For Ms. Kaopuiki, “The culture of my area is ‘local.’ I’ve always stated that because if I went to my neighbors’ house to visit, it was probably a Japanese house or a Chinese house. And we ate simple American food.” When thinking back to the late-1950s and early-1960s, Ms. Kaopuiki describes a close-knit community that has changed: “the warmth and welcome has gone: evaporated.” She explains that, “Now they have towers next to McKinley High School.” She recalls that, in the past, “People walked to school…. Kids back then got to know each other and spend time with each other more…. When you walk more, you see what’s in the area. Today, when you drive more, you just jump in a car, and you’re off.”

Thus, discussions of agriculture and sustainability, harkens nostalgically to a period when working class values in Kewalo Ahupua‘a helped to create a close knit local culture.

7.2 *Wahi Pana*

The Kewalo area once had a famous fishpond that was used to drown *kauwā* or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaihehe‘e* (Kamakau 1991:6), or *Ke-kai-he‘ehe‘e*, which translates as “sea sliding along,” suggesting that the victims were slid under the sea (Westervelt 1991:16). Kewalo is described as:

> A fishpond and surrounding land on the plains below King Street, and beyond Koula [Kō‘ula]. It contains a spring rather famous in the times previous to the conversion to Christianity, as the place where victims designed for the Heiau of Kanelaau on Punchbowl slopes, was [sic.] first drowned. The priest holding the victim’s head under water would say to her or him on any signs of struggling, “Moe malie i ke kai o ko haku.” “Lie still in the waters of your superiors.” From this it was called Kawailumalumai, “Drowning waters.” (Sterling and Summers 1978:292)

Since Kō‘ula (meaning “red sugar cane”) appears to refer to the area near Kō‘ula Street, on the west side of Ward Avenue, the description suggests (“beyond Koaula”) that the Kawailumalumai Pond may have been near what was once the Ward Estate (now Neal Blaisdell Center).

Mr. Kapanui remembers that his mother, who worked in the Kalihi Poi Factory, described the Kaka‘ako area as a place of coral flats, landfill, and dumps. He relates a story of sacrificial drowning that occurred in Kaka‘ako (Kewalo). Kanela‘au Heiau, a sacrificial heiau, was once located on the slopes of Punchbowl Crater at the current location of Stevenson Intermediate School’s cafeteria, and another pond use for drowning located near the former coastline at the Kawaiaha‘o Church. Two areas were used to drown victims by strangulation so that the victim’s body would remain intact without excessive blood and bruises. The sacrificial drowning took place at the waters of the Kewalo Basin and an inland pond located at the Blaisdell Center. Although he cannot remember the name of the heiau, Mr. Kapanui recalls that the name referred to “the man who sleeps.”

From the *mo’olelo*, one can see that Kewalo was famous for ceremonial sites, such as Pu‘ukea Heiau and Kewalo Spring. However, the most noted *wahi pana* is Kawailumalumai Pond, where humans sacrifices were drown, a pond that seems to have existed near the Project area (perhaps where Blaisdell Center is now).

7.3 Marine and Plant Resources

As far as fishing in the area, Ms. Kaopuiki heard of net fishing and pole fishing near Ala Moana and the Kewalo Basin, fishing from the shoreline and in boats. For Uncle Charles Kapua, his grandfather on his mother’s side had a sampan boat that would go out to catch fish in Kewalo Basin. They would catch *aku*, *‘ōpelu*, *akule* (*Trachurops crumenophthalmus*) and other fish. When asked if he remembered the names of the *aku* boats, he remembered the Yellowfin *aku* boat.

The unnamed participant also shares fond memories of fishermen in the area. As a child, she learned to swim in the near harbor at Kewalo Basin, and often ran on the piers without any moored *aku* sampans. She fished in the harbor and caught several kinds of reef fish, including ‘aweoweo (various species of *Priacanthus*), *manini* (*Acanthurus triostegus*), *opelu* (*Decapterus pinnulatus*), *‘aholehole* (*Kuhlia sandvicensis*), and *‘ama‘ama* (*Mugil cephalus*), and squid. Several of her uncle’s were *aku* (*Katsuwonus pelamis*) sampan fishermen at Kewalo Basin. After selling their catch at the fish auction, they divided any extra fish amongst themselves and shared it with their families. They also dried the fish and squid. She remembers that, while not fishing, her uncles and other fishermen repaired their nets, cleaned the boats, and talked story.

Regarding the gathering of plants in the Kewalo Ahupua‘a, Ms. Kaopuiki does not know of gathering practices near McKinley High School, “because the area was developed already.” Gathering took place “up in Makiki and Tantalus.” Ms. Kaopuiki remembers her club at school made plumeria lei for the graves at Punchbowl Cemetery, from the many plumeria trees near McKinley High School. Many homes had mango trees, avocado trees, breadfruit trees, guava trees, lychee trees, and flower trees, including plumeria trees.

Uncle Charles Kapua remembers various plants that were gathered from the *ahupua‘a* near the Project area. For the *imu*, they would collect banana stumps. He also remembers collecting and drying *koko‘olau*, for tea. This plant was collected in many places, even on the streets in Kaka‘ako. He would collect the plant, pulling it out by the roots. The *kōko‘olau* was then dried by hanging it by the roots. Later, the leaves were used for tea.

Uncle Charles also gathered *wiliwili* berries at Thomas Square and the nearby area. As a child of eight or nine, he was taken to Tomas Square, given an empty mayonnaise jar, and asked to fill the jar with seeds. It took several hours to fill the jar. These seeds were then used for seed *lei*.

This unnamed participant remembers the land *mauka* of the Ala Moana Beach as primarily marshes. The land was very spacious with very few residences. There she collected medicinal herbs with her grandmother who practiced *lā‘au lapa‘au*. They collected *‘uhaloa* (*Waltheria indica americana*) for sore throat: “You cleaned the root real well and you made a tea out of it. And that was used for sore throats and colds.” She explained that, “You pulled the plant out of the ground and the roots were cleaned, and then they were boiled. And then you used it as a tea: not the leaves, the tea from the roots—not the leaves.” They also gathered castor beans for treating chicken pox and skin problems. They boiled the beans and the ailing person bathed with them. Her grandmother also grew guava and picked the young shoots for diarrhea. They also collected a small crawling plant, similar to aloe but without thorns, at sandy areas to mend broken legs. They mashed it, urinated on it, and placed it on the broken leg. For asthma, they mashed *pōpolo* (*Solanum nigrum*) leaves and steamed them in *ti* leaves (*Cordyline fruticosa*) with a little salt. The asthmatic person chewed and swallowed this mixture with a spoonful of *poi*. If she were becoming sick, she received a water enema and drank *māmaki* (probably *Pipturus albidus*) or guava tea. For healing, the participant also sat on a chair with a bucket of boiled herbs under them. Covered with a blanket, she smelled the boiled herbs, sweated, and finally slept.

This participant also remembers *laukahi* as one of the plants that grew at McKinley High School. According to this participant, the *laukahi* was pounded and used as a poultice, as well as for other things. While the *laukahi* plant remains at McKinley High School to this day, this

participant did not see the *uhaloa* the last time that she visited the school. According to this participant, McKinley High School also had mango trees.

This participant gathered *limu* with her grandmother on the shores of Ala Moana Beach, including *limu ‘ele‘ele* (*Enteromorpha prolifera*), which was used to enhance stews, and a kind of limu that grows on *‘opihi*. In addition to the knowledge of medicinal plants and *limu*, her grandmother had the best reputed garden in the area. Neighboring women often stopped by her garden before church to gather flowers and plants for their hats. Large baskets of *laua‘e* ferns hung from the rafters above the porch.

For participants in this study, marine and plant resources were central to the culture of the Kewalo Ahupua‘a. Indeed some of these plants were gathered within the Project area.

7.4 *Ilina* (Burials)

In 2009, CSH completed an archaeological monitoring plan for a portion of the McKinley High School Athletic Complex Master Plan Project (O’Hare et al. 2009). This area included the softball stadium and the girl’s locker room and shower facility. The monitoring plan specified that an archaeological monitor would be on-site during all ground-related disturbance activity below 18 in (0.45 m), due to the cultural sensitivity of the area and the number of burial finds already encountered in the vicinity of the project area. No fieldwork was performed under this monitoring plan.

In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined the following:

> Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

7.5 Historical Representation

The cultural significance of McKinley High School is closely associated with the historical representation of U.S. President William McKinley in Hawai‘i. In 1898 President McKinley signed the Newlands Resolution and is immortalized in a bronze statue at the school. The *Joint Resolution to Provide for the Annexing of the Hawaiian Islands to the United States* (1898), or Newlands Resolution, is a U.S. domestic law, not an instrument of international law. While the Newlands resolution is the purported means by which the United States annexed the Hawaiian Islands, there is no ratified treaty of annexation. And yet, the McKinley Statue holds a document labeled “Treaty of Annexation” (Figure 17), implying that a treaty was the document that President McKinley ratified.

For Ms. Kaopuiki, accurate historical representation is a matter of understanding a sense of place. For Ms. Kaopuiki, this also requires a sense of history. She explains:

> This school is named in honor of someone whose place in Hawaii’s history is not one of pride. Wouldn’t it be nice if it was decided that, because the school is an educational institution and should represent truth, that President McKinley doesn’t deserve such honorable recognition—here in Hawai‘i anyway. The name of the school should be changed and the statue removed. President McKinley hurt Hawaii—and even started a movement that helped to destroy Hawai‘i—from the jewel that it is in the ocean…. The statue is the symbol of the person who is being honored and he doesn’t deserve it. What we are learning today is the true facts of his actions toward Hawai‘i…. the facts of history and the development of Hawai‘i are recorded. How does he relate to the culture? McKinley holds a false place of honor in the facts and culture of Hawai‘i, culture meaning that certain things happened in Hawai‘i as a result of his actions with the false annexation that affected the people and how they lived then until today. Acts in history develop culture. The things that happen in history develop culture. And so his place in the development of Hawai‘i only hurt Hawai‘i and its people. It’s dishonorable to have the name continue on that school while our people know the truth now.

At the same time, this statue offers a sense of pride for some McKinley graduates. Senator Chun Oakland links the McKinley Code of Honor with the sacredness of the McKinley Statue: “If look at our Code of Honor, that embraces the standards by which we are to conduct ourselves…. Even the oval around the McKinley Statue—I don’t know if you know that tradition…. You never step on it until the day you graduate, and only on the day you graduate. So, anybody, whether you are visitor, student, teacher, you never step on that…. out of respect.” The statue then is raises the issues of accuracy and respect.

Mr. Kapua, a McKinley Alumnus and a retired U.S. veteran, recommends that the truth regarding the McKinley Statue be addressed: “If not now, then when?” The statue holds a document, and the words on the document are “Treaty of Annexation.” Mr. Kapua believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. He does not believe this is a matter of rewriting history, but instead honestly portraying the truth of history. He also believes that a plaque is more respectful and less costly than taking down the statue and fixing it.

Section 8 Summary and Recommendations

At the request of Group 70 International, Inc., Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this Cultural Impact Assessment (CIA) for the proposed McKinley High School Athletic Complex, Honolulu (Kewalo) Ahupua‘a, Honolulu (Kona Moku) District, Island of O‘ahu, TMK: [1] 2-3-009:001 (por.). The Project area is a portion of the present McKinley High School campus, located north-east of Kapi‘olani Boulevard and between the Neal Blaisdell Exhibition Center on the west and Pensacola Street on the east. The entire Project area is approximately 22.1 acres, which includes an approximately 3.4-acre area that is covered under the O'Hare et al. 2009 archaeological monitoring plan. The following sections offer a summary of the information contained in this report, as well as recommendations for mitigation measures.

8.1 Results of Background Research

Background research for this Project yielded the following results:

1. Covington's 1881 map indicates that the Project area is within Kewalo Ahupua‘a and that the Kewalo Ahupua‘a is comprised of Kaka‘ako ‘Ili on the east and Kukuluāe‘o ‘Ili on the west. While modern districting refers to Kewalo Ahupua‘a as Kaka‘ako District, the size and placement of the letters on Covington's 1881 map suggest that Kewalo is the larger land division, with Kaka‘ako ‘Ili and Kukuluāe‘o ‘Ili inside this *ahupua‘a*. Moreover, Kewalo is not a continuous *ahupua‘a*. As the Hawaiian Government Surveys office explained in 1850: "Kewalo … had its seacoast adjoining Waikīkī, its continuous kula on the plain, and one-half of Punchbowl Hill and its kalo land in Pauoa valley" (see Section 4.2.1).
2. From the *m‘oolelo*, one can see that Kewalo, with the *‘ili* of Kaka‘ako and Kukuluāe‘o, was noted for its fishponds and salt pans, for the marsh lands where *pili* grass and other plants could be collected, for ceremonial sites such as Pu‘ukea Heiau and Kewalo Spring, for Kawailumalumai Pond, where sacrifices were made, and for the trails that allowed transport between the more populated areas between Waikīkī and Honolulu.
3. Important chiefs were born in the Kewalo area and conducted religious rites, and commoners traveled to the area to procure food and other resources. Some commoners perhaps lived in the area, adjacent to the ponds and trails.
4. Perhaps the most famous *wahi pana* (storied place) of Kewalo is the fish pond called Kawailumalumai, or "Drowning Waters," used to drown *kauwā* or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaihehe‘e* (Kamakau 1991:6), or *Ke-kai-he‘ehe‘e*, which translates as "sea sliding along," suggesting that the victims were slid under the sea (Westervelt 1991:16). Early references indicate that Kawailumalumai Pond may have been near what was once the Ward Estate (now Neal Blaisdell Center).
5. Kewalo is located between two centers of population, Kou and Waikīkī, on the southern shore of pre-Contact O‘ahu. In Waikīkī, a system of taro *lo‘i* (irrigated fields) fed by streams, descending from Makiki, Mānoa, and Pālolo valleys, blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou (the area of downtown Honolulu surrounding the harbor) possessed shoreward fishponds and irrigated fields

watered by ample streams descending from Nu‘uanu and Pauoa Valleys. The pre-Contact population and land use patterns of Kewalo may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with them.

6. By the 1840s LCA claims indicate that traditional Hawaiian usage of the region and its environs seems to have remained confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from Makiki and Mānoa Valleys. Kewalo had a narrow upland section (often called "Kewalo Uka"), a larger lower river valley section, and a small coastal section (called "Kewalo Kai") joined by a small strip of land. The Project area is within this large LCA claim. Taro patches probably existed north of King Street. The lot south of the Project area consisted of fish ponds. It is evident from the 1855 La Passe map (Figure 9), that there were also once fish or salt ponds in the current Project area. An 1897 map (Figure 13) indicates that the swampy central Kewalo section was used to plant rice by the late nineteenth century.
7. The Ward Estate once covered a large portion of the Kaka‘ako Mauka District. Curtis Perry Ward, a native of Kentucky, came to the Hawaiian Islands in 1853 and in 1865 married Victoria Robinson, who was descended from the Hawaiian *ali‘i* and early French and British residents. For his new family, Ward purchased at auction the 12-acre estate of Joseph Booth, Royal Patent 306, and additional contiguous lands in the Kō‘ula area in 1870 (Hustace 2000:21–25). This constituted the *mauka* portion of "Old Plantation" from Thomas Square on King Street to the *makai* border at Waimanu Street. A few years later (before 1875), Ward added to his property with the purchase of 77 acres and 3,000 feet of ocean frontage in the *‘ili* of Kukuluāe‘o, *makai* of Queen Street. Workers were hired to clear the fishponds and ditches, plant taro in the fishponds, fence in pastures for the horse, plant 6,000 coconut trees, plant *kiawe* trees for firewood, and restore the *kāhaka* (salt pans) near the shore (Hustace 2000:41).
8. In 1930, her husband having died in 1882, Victoria Ward incorporated Victoria Ward, Limited to manage the estate. In 1957, the City and County of Honolulu purchased the *mauka* portion of the estate to construct the new Blaisdell Civic Center (Hustace 2000:67, 77).
9. In 1907, when Honolulu High School moved from Fort Street to its new building on the corner of Beretania and Victoria Streets, two blocks north of its present location (Figure 18), the new school was named the President William McKinley High School. In 1898 President McKinley had signed the Newlands Resolution. From 1898 forward, Hawai‘i was referred to as the Territory of Hawai‘i (until 1959 when the official name changed to the State of Hawai‘i). Due to an increase in students, a new site was acquired in 1921, just two block from its 1907 site. McKinley High School moved in 1923 to its present location between King Street and Kapi‘olani Boulevard, west west of Pensacola Street (Figure 18). McKinley High School was the only public high school in Honolulu prior to the construction of Farrington High School in 1936. McKinley High School was particularly important for the first and second generation descendants of sugar plantation immigrant workers, and more than half of the student population was composed of students of Japanese descent in the 1930s (Odo 2004:76).

10. According to the McKinley High School website, “A statue of President McKinley was commissioned for $8,000. Completed in New York, the Bronze eight-ton statue was shipped to Honolulu and dedicated on February 23, 1911” (President William McKinley High School). In 1911, the *Pacific Commercial Advertiser* reported that the statue was intended to “immortalize his memory” (*Pacific Commercial Advertiser* 1911). The *Joint Resolution to Provide for the Annexing of the Hawaiian Islands to the United States* (1898), or Newlands Resolution, signed by President McKinley, is a U.S. domestic law, not an instrument of international law. No treaty of annexation was ratified under U.S. law. Yet the McKinley Statue holds a document labeled “Treaty of Annexation” (Figure 17).
11. After World War II, the Kaka‘ako area became increasingly industrialized, and residents moved out to the newer subdivisions away from the Honolulu central area. A 1943 U.S. War Department map (Figure 16) shows the newly developed Kewalo Basin. A 1956 U.S. Army map of O‘ahu (Figure 20) illustrates the continued construction of buildings and fields at McKinley High School, including an athletic field within the current Project area.
12. In 2009, CSH completed an archaeological monitoring plan for a portion of the McKinley High School Athletic Complex Master Plan Project (O’Hare et al. 2009). This area included the softball stadium and the girl’s locker room and shower facility. The monitoring plan specified that an archaeological monitor would be on-site during all ground-related disturbance activity below 18 in (0.45 m), due to the cultural sensitivity of the area and the number of burial finds already encountered in the vicinity of the project area. No fieldwork was performed under this monitoring plan.
13. In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined the following:

> Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

8.2 Results of Community Consultation

Kama‘āina and *kūpuna* with knowledge of the proposed Project and study area participated in semi-structured interviews for this CIA. CSH attempted to contact 20 individuals for CIA report, of which 10 responded and 5 participated in formal interviews, which occurred from November to December 2010. Some interviews were supplemented with detailed information from previous CSH interviews by the same participants for another project on Kewalo.

1. The two McKinley High School alumni celebrated the diversity of the school. State Senator Suzanne Chun Oakland thus describes the culture of McKinley High School:

> McKinley has always had a very diverse population of people, so we celebrated culturally. We had a May Day program during the day and in the evening. And we had all the students share their cultural practices, whether it was games, food, different kinds of dances, song. So, I don’t know if there has been that kind of continuation. But I know that when I was there, I really wanted to celebrate the diversity of our cultures there. You had over 3,000 teachers because every student was a teacher for me, personally.

When thinking back to the late-1950s and early-1960s, Ms. Pi‘ilani Kaopuiki similarly describes a community where there was an exchange of cultural foods and ideals. For Ms. Kaopuiki, the community has changed: “the warmth and welcome has gone: evaporated.” Yet, Ms. Kaopuiki also notes that McKinley High School’s lack of Hawaiian cultural significance as the primary trait of the school: “To me, the cultural significance of McKinley (High School) is that it doesn’t have any Hawaiian culture in its physical plans now. It looks like wherever it came from…someplace in Europe.”

2. Plants and agriculture of Kewalo were once an important part of the school curriculum and the culture. Senator Chun Oakland recalls a club at McKinley High School for Future Farmers of America and many other clubs, as well as a robust agricultural program before she became a student. While she was a student, these clubs and the agricultural programs “just did planting on the school site. My understanding before is that they used to go to the farms and be able to take care of the farms. That was part of the curriculum.”

   Mr. Charles Kapua remembers various plants that were gathered from the *ahupua‘a* (land division usually extending from the uplands to the sea) near the Project area, including banana stumps, *kōko‘olau* plants, *kamani* leaves, and *wiliwili* berries.

   One unnamed participant gathered medicinal plants for *lā‘au lapa‘au*. These included *‘uhaloa*, *pōpolo*, *māmaki*, *kī* and *laukahi*. The *‘uhaloa* and *laukahi* were gathered on the McKinley High School campus. This anonymous participant identifies plants as part of Hawaiian sensibilities. She believes that, “the grounds could use some work…. I hope they keep the Hawaiian flavor too—and not be so sterile…. I think the plantings and grounds should blend with the style of these stately buildings.”

   Ms. Kaopuiki similarly believes that native plants should be included in the new landscaping: “My hope is that they will incorporate native plantings. You’re going to have plantings—then use native plantings because we have them available now.”

3. As far as fishing in the area, Ms. Kaopuiki heard of net fishing and pole fishing near Ala Moana and the Kewalo Basin, fishing from the shoreline and in boats. For Uncle Charles Kapua, his grandfather on his mother’s side had a sampan boat that would go out to catch fish in Kewalo Basin. They would catch *aku, ‘ōpelu, akule* and other fish. When asked if he remembered the names of the *aku* boats, he remembered the Yellowfin aku boat. The unnamed participant fished in the harbor and caught several kinds of reef fish, including ‘aweoweo, *manini*, *opelu*, *‘aholehole*, and *‘ama‘ama*, and squid (see Appendix B).
4. All participants spoke of a sense of place, in one way or another. However, this idea meant different things to each individual. For Ms. Kaopuiki:

> A sense of place means that you recognize that we have trade winds, and try to use that in the design. That's the sense of place. I've been to some places that as soon as you get off the airplane, and you see the buildings, you know that you are in someplace different because their designs speak of where they are: Sāmoa. It's hard if you are in a city. But these people have an opportunity, especially since they're not going to build towers, where towers have to meet certain conditions, they can design so that there's a sense of being in Hawai‘i.

Senator Chun Oakland associates this sense of place with the architecture of the schools and the surrounding area: "What has been associated with McKinley [High School] are the beautiful grounds that we have. The historic buildings that we were able to preserve. So, I really hope that kind of ambiance is kept." Uncle Charles recommends building structures that match the existing architecture of the school.

5. Three of the five participants interviewed mentioned the inaccuracy of the McKinley Statue specifically. While the statue is a source of pride for one participant in this study, the three Native Hawaiians interviewed spoke of the inaccuracy of the depiction. Some viewed the "Treaty of Annexation," held in the statue's hand, as an attempt to misrepresent history. Ms. Kaopuiki explains that:

> This school is named in honor of someone whose place in Hawaii's history is not one of pride. Wouldn't it be nice if it was decided that, because the school is an educational institution and should represent truth, that President McKinley doesn't deserve such honorable recognition—here in Hawai‘i anyway. The name of the school should be changed and the statue removed.

Mr. Kapanui also recalls that, "There was some controversy about the statue in front of the auditorium. That the document had something to do with—something that really wasn't what it was all about—something to do with the overthrow."

Mr. Kapua, a U.S. veteran and a McKinley High School alumnus, recommends that the truth regarding the McKinley Statue be addressed: "If not now, then when?" The statue holds a document, and the words on the document are "Treaty of Annexation": Uncle Charles believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. He believes that the past needs to be corrected. He does not believe this is a matter of rewriting history, but instead honestly portraying the truth of history. He also believes that a plaque is more respectful and less costly than taking down the statue and fixing it.

8.3 Recommendations

Based on the information gathered from archival documents, the companion archaeological inventory survey (Burke and Hammatt 2010), and the community consultation detailed in this CIA report, CSH recommends the following measures to mitigate potentially adverse effects on cultural, historical, and natural resources, practices, and beliefs:

1. In the accompanying AISP to this CIA, Burke and Hammatt (2010) determined that, "previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo

area." With this AISP determination in mind, CSH recommends that a cultural and archaeological monitor be present during all phases of construction. Personnel involved in excavation at McKinley High School during construction, should be mindful that burials may be uncovered. Personnel involved in development activities in the Project area should be informed of the possibility of inadvertent cultural finds, including human remains. Should cultural or burial sites be identified during ground disturbance, all work should immediately cease and the appropriate agencies notified pursuant to applicable law.

2. All participants in this study referred to the "sense of place," or similar concepts, as a guiding principle for this Project moving forward. With this in mind, participants asked that the School design buildings and landscapes that fit within Hawai‘i's unique environment. Senator Chun Oakland associates this sense of place with the architecture of the schools and the surrounding area: "What has been associated with McKinley [High School] are the beautiful grounds that we have. The historic buildings that we were able to preserve. So, I really hope that kind of ambiance is kept." Mr. Kapua recommends building structures that match the architecture that exists at the school. Ms. Kaopuiki believes that, "the grounds could use some work…. I hope they keep the Hawaiian flavor too—and not be so sterile…. I think the plantings and grounds should blend with the style of these stately buildings." Ms. Kaopuiki similarly believes that native plants should be included in the new landscaping: "My hope is that they will incorporate native plantings. You're going to have plantings—then use native plantings because we have them available now."
3. While the McKinley Statue does not fall within the Project area, three of the five participants interviewed mentioned the inaccuracy of the McKinley Statue specifically. The McKinley Statue does indirectly impact the proposed construction on the campus, and it is not a cultural issue that is likely to subside. Mr. Kapua recommends that the truth regarding the McKinley Statue be addressed: "If not now, then when?" Mr. Kapua believes that a plaque should be erected in front of the statue to draw attention to the inaccuracy, thus remedying the wrong. CSH agrees that a plaque may be the least expensive and most direct means for addressing this issue. However, CSH also recommends that McKinley High School work with the Hawaiian community to determine the most amicable means of resolution.

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Appendix A Glossary

To highlight the various and complex meanings of Hawaiian words, the complete translations from Pukui and Elbert (1986) are used unless otherwise noted. In some cases, alternate translations may resonate stronger with Hawaiians today; these are placed prior to the Pukui and Elbert (1986) translations and marked with “(common).”

Diacritical markings used in the Hawaiian words are the *‘okina* and the *kahakō*. The *‘okina*, or glottal stop, is only found between two vowels or at the beginning of a word that starts with a vowel. A break in speech is created between the sounds of the two vowels. The pronunciation of the *‘okina* is similar to saying “oh-oh.” The *‘okina* is written as a backwards apostrophe. The *kahakō* is only found above a vowel. It stresses or elongates a vowel sound from one beat to two beats. The *kahakō* is written as a line above a vowel.

Hawaiian Word	English Translation
ahupua‘a	Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (*ahu*) of stones surmounted by an image of a pig (*pua‘a*), or because a pig or other tribute was laid on the altar as tax to the chief.
aikane	Friend
‘āina	Land, earth.
aku	Bonita, slapjack
akua	God, goddess, spirit, ghost, devil, image, idol, corpse; divine, supernatural, godly.
ala	Path, road, trail.
ali‘i	Chief, chiefess, officer, ruler, monarch, peer, headman, noble, aristocrat, king, queen, commander.
aloha	Love, affection, compassion, mercy, sympathy, pity, kindness, sentiment, grace, charity; greeting, salutation, regards.
‘āpana	Piece, slice, portion, fragment, section, land parcel.
‘aumakua	Family of personal gods, deified ancestors who might assume the shape of sharks, owls, hawks (etc.). A symbiotic relationship existed; mortals did not harm or eat *‘aumakua*,

	and *‘aumakua* warned and reprimanded mortals in dreams, visions, and calls. *‘Aumākua*—plural of *‘aumakua*.
‘auwai	Ditch, canal.
hana	Work, labor, job, employment, occupation, duty, office, activity, function, practice, procedure, process, deal, incident, reason, action, act, deed, task, service, behavior.
haole	White person, American, Englishman, Caucasian; American, English; formerly, any foreigner; foreign, introduced, of foreign origin, as plants, pigs, chickens.
haiku	Perhaps bonito (not found in Pukui and Elbert: see *aku*)
heiau	Pre-Christian place of worship, shrine; some *heiau* were elaborately constructed stone platforms, others simple earth terraces. Many are preserved today.
ho‘o	Prefix; to correct
ho‘okupu	Offering, gift.
hulumanu	Tick used for mattresses and pillow covers, so called because they were stuffed with bird feathers.
iki	Small, little, slightly.
‘ili	Land section, next in importance to an *ahupua‘a* and usually a subdivision of an *ahupua‘a*.
ilina	Grave, tomb, sepulcher, cemetery, mausoleum, plot in a cemetery.
imu	Underground oven.
iwi	Bone; carcass (as of a chicken); core (as of a speech). The bones of the dead, considered the most cherished possession, were hidden, hence there are many figurative expressions meaning life, old age.
kahu	Honored attendant, guardian, nurse, keeper of *‘unihipili* bones, regent, keeper, administrator, warden, caretaker, master, mistress.
kāheka	Pool, especially a rock basin where the sea washes through

	an opening and salt forms; salt pan.
kahuna	Priest, sorcerer, magician, wizard, minister, expert in any profession. *Kāhuna*—plural of *kahuna*.
kālua	To bake in the ground oven, to burn brick or lime.
kama‘āina	Native-born, one born in a place, host; native plant; acquainted, familiar, Lit., land child.
kapa	Tapa, as made from *wauke* (paper mulberry) or *māmaki* bark.
kapu	Taboo, prohibition; special privilege or exemption from ordinary taboo.
ko‘a	Fishing grounds, usually identified by lining up with marks on shore. Shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams, used in ceremonies as to make fish multiply.
kōkua	Help, aid, assistance, relief, assistant, associate, deputy, helper; co-operation, old term for lawyer before *loio* was used; to help, assist, support, accommodate, second a motion.
konohiki	Headman of an *ahupua‘a* land division under the chief.
kula	Plain, field, open country, pasture. An act of 1884 distinguished dry or *kula* land from wet or taro land. Also a container (as for salt).
kuleana	Native Hawaiian land rights (common). Right, privilege, concern, responsibility, title, business, property, estate, portion, jurisdiction, authority, liability, interest, claim, ownership, tenure, affair, province.
kumu	Teacher, tutor. *Kumu hula*, *hula* teacher.
kupuna	Elders (common). Grandparent, ancestor, relative or close friend of the grandparent’s generation, grandaunt, granduncle. *Kūpuna*—plural of *kupuna*.
lei po‘o	*Lei* worn on the head
limu	A general name for all kinds of plants living under water, both fresh and salt.

lā‘au lapa‘au	Traditional plant medicine (common). Medicine. Lit. Curing medicine.
lau hala	Pandanus leaf, especially as used in plaiting.
laulau	Packages of *ti* leaves or banana leaves containing pork, beef, salted fish, or taro tops, baked in the ground oven, steamed or broiled.
lei	Garland, wreath, necklace of flowers, shells, ivory, feathers, or paper, given as a symbol of affection; any ornament worn around the head or about the neck.
lele	Detached part or lot of land belonging to one *‘ili*, but located in another *‘ili*
lo‘i	Irrigated terrace, especially for taro, but also for rice; paddy.
loko i‘a	Fish pond (common).
mahalo	Thanks, gratitude; to thank.
Māhele	Land division of 1848
mālama	To take care of, tend, attend, care for, preserve, protect, beware, save, maintain.
maka‘āinana	Commoner, populace, people in general
makai	Seaward.
makana	Gift.
mana‘o	Thought, idea, belief, opinion, theory.
mauka	Inland.
mele	Song, anthem or chant of any kind; poem, poetry; to sing, chant.
menehune	Ledendary race of small people who worked at night, building fish ponds, roads, temples.
moku	District, island, islet, section.
mo‘olelo	Story, tale, myth, history, tradition, literature, legend, journal, log, yarn, fable, essay, chronicle, record, article;

	minutes, as of a meeting. (From *mo‘o ‘ōlelo*, succession of talk; all stories were oral, not written).
‘ohana	Family, to gather for family prayers.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
oli	Chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill at the end of each phrase; to chant thus.
‘ono	Delicious, tasty, savory.
‘ō‘ō	Digging stick, digging implement, spade.
‘ōpala	Trash, rubbish, refuse, litter, waste matter, junk, garbage, muck; littered.
pā	Fense, wall, corral, pen, sty, enclosure, courtyard, patio, arena, (house) lot, yard,extremity.
pāhoehoe	Smooth, unbroken type of lava, contrasting with ‘a‘ā.
pa‘i	To slap, spank, beat, hit, clap.
pākini	Tin pan, pan, basin.
pali	Cliff, precipice, or steep slope.
palu	A relish made of the head or stomach of a fish.
paniolo	Cowboy.
pepeiao	Ear; Chinese [dumpling] stuffed with meat
pipi	Beef, cattle, ox.
poho kai	Mortor (salt mortor)
poke	To slice, cut crosswise into pieces, as fish or wood; to press out, as the core of a boil or the meat of an *‘opihi* shell; section, slice, piece. *Poke he‘e*, a severed portion of octopus.
pono	Goodness, uprightness, morality, moral qualities, correct or proper procedure, excellence, well-being, prosperity, welfare, benefit, behalf, equity, sake, true condition or nature, duty.

poi	*Poi*, the Hawaiian staff of life, made from cooked taro corms, or rarely breadfruit, pounded and thinned with water.
pū	Large triton conch or helmet shell.
pule	Prayer.
pūlehu	To broil, as sweet potatoes, breadfruit, or bananas placed on hot embers.
punia	Pas/imp of *puni* [to lie]
pūpū	Relish, appetizer, formerly, the fish, chicken, or banana served with kava.
pu‘uone	Sand hill.
tūtū	Granny, grandma, grandpa; granduncle, grandaunt; any relative or close friend of grandparent’s generation.
‘uhane hauke‘e	Wandering spirit
‘ūhini	Grasshopper.
‘ulu	Breadfruit, a tree perhaps originating in Malaysia and distributed through tropical Asia and Polynesia.
‘umeke	Bowl, calabash, circular vessel, as of wood or gourd.
wa‘a	Canoe, rough-hewn canoe, canoemen, paddlers.
wāhine	Woman, lady, wife; sister-in-law, femail cousin-in-law; plural of *wahine*.
wahi pana	Storied place (common). Legendary place.
wai	Water, liquid or liquor of any kind other than sea water.
waiwai	Goods, property, assets, valuables, value, worth, wealth, importance, benefit, estate, use
wana	A sea urchin, as *Diadema paucispinum* and *Echinothrix diadema*, considered by some an *‘aumakua*.
wi	A grainy snail.

Appendix B Common and Scientific Names for Plants and Animals Mentioned by Community Participants

Common Names		Possible Scientific Names		Source
Hawaiian	**Other**	**Genus**	**Species**	
āholehole	juvenile *āhole* (Hawaiian flagtail)	*Kuhlia*	*xenura*	Hoover 2003
‘aiea		*Nothocestrum*	spp.	Carr 2006
aku	bonito, skipjack tuna	*Katsuwonus*	*pelamis*	Pukui and Elbert 1986
akule	big-eyed scad	*Selar*	*crumenophthalmus*	Hoover 2003
alahe‘e		*Psydrax*	*odoratum*	Carr 2006
‘ala‘ihi	squirrel fish	*Sargocentron*	*spp.*	Randall2010
‘ala‘ihi	squirrel fish	*Neoniphon*	*spp.*	Randall 2010
‘ama‘ama	Striped mullet	*Mugil*	*cephalus*	Hoover 2003
‘ape	large taro	*Alocasia*	*macrorrhiza*	Pukui and Elbert 1986
‘auhuhu	shrubby legume	*Tephrosia*	*purpurea*	Pukui and Elbert 1986
‘āweoweo	Bigeye	*Heteropriacanthus*	*cruentatus*	Hoover 2003
‘āweoweo	Bigeye	*Priacanthus*	*meeki*	Hoover 2003

awa	Milkfish	*Chanos*	*chanos*	Hoover 1993
hala	Pandanus	*Pandanus*	spp.	Wagner et al. 1999
hala pepe		*Pleomele*	spp.	Carr 2006
hau	beach hibiscus	*Hibiscus*	*tiliaceus*	Wagner et al. 1999
hā‘uke‘uke kaupali	armored sea urchin	*Colobocentrotus*	*atratus*	Pukui and Elbert 1986
he‘e	octopus, squid, *tako*	Multiple families and species		Hoover 1993
huehue		*Cocculus*	*orbiculatus*	Carr 2006
hīnālea	psychedelic wrasse	*Anampses*	*chrysocephalus*	Randal 2010
humuhumu	trigger fish			Pukui and Elbert 1986
huluhulu waena limu	uncertain			
‘iliahi		*Santalum*	spp.	Wagner et al. 1999
kala	unicorn fish	*Naso*	spp.	Randall2010
kalo	taro	*Colocasia*	*esculenta*	Wagner et al. 1999
kamani		*Colophylum*	spp.	HEAR 2010
kauila		*Colubrina*	*oppositifola*	Carr 2006
kawakawa	makerel tuna	*Euthynnus*	*affinis*	Hoover 2003

koa haole		*Leucaena*	Spp.	Wagner et al. 1999
ko‘oko‘olau	Beggartick	*Bidens*	Spp.	Wagner et al. 1999
kou		*Cordia*	subcordata	Carr 2006
kūhonu	spotted–back crab	*Portunus*	*sanguinolentus*	Hoover 1993
kukui	Candlenut	*Aleurites*	*moluccana*	Wagner et al. 1999
kūmū	white saddle goatfish	*Parupenus*	*porphyreus*	Hoover 1993
kūpe‘e	marine snail	*Nerita*	*polita*	Pukui and Elbert 1986
lākana	lantana	*Lantana*	*spp.*	Pukui and Elbert 1986
lama		*Diospyros*	*sandwicensis*	Carr 2006
lau‘īpala	yellow tang	*Zebrasoma*	*flavescens*	Hoover 1993
laukahi		Multiple genera and spp.		
leho	cowry	Family *Cypraeidae*		Hoover 1993
liliko‘i	passion fruit	*Passiflora*	*edulis*	Wagner et al. 1999
limu ‘ele‘ele	seaweed, algae	*Entermorpha*	*prolifera*	Abbott and Williamson 1974
limu kohu	seaweed, algae	*Asparagopsis*	*taxiformis*	Abbott and Williamson 1974
maiapilo or *pilo*		*Capparis*	*sandwichiana*	Carr 2006

maiko		*Acanthurus*	*nigroris*	Randall 2010
māmaki		*Pipturus*	spp.	Pukui and Elbert 1986
manini	convict tang	*Acanthurus*	*triostegus*	Hoover 2003
menpachi (Japanese)	soldierfish	*Myripristis*	spp.	Hoover 2003
milo		*Thespesia*	*populnea*	Wagner et al. 1999
moi	threadfin	*Polydactylus*	*sexfilis*	Hoover 1993
naio		*Myoporum*	*sandwicense*	Carr 2006
naupaka kahakai		*Scaevola*	*Sericea*	Wagner et al. 1999
noni	Indian mulberry	*Morinda*	*citrifolia*	Wagner et al. 1999
‘oama	Goatfish	*Mulloidicthys*	spp.	Randall 2010
‘ohe makai	bamboo of the mountains	*Schizostachyum*	spp.	Wagner et al. 1999
‘ōlapa		*Cheirodendron*	spp.	Carr 2006
‘ōlena	Tumeric	*Curcuma*	*longa*	Wagner et al. 1999
‘ōpelu	mackerel scad	*Decapterus*	*macarellus*	Hoover 2003
‘opihi	limpet	*Cellana*	spp.	Pukui and Elbert 1986
‘ōkole	sea anemone			Pukui and Elbert 1986

paina	Ironwood	*Casuarina*	sp.	Wagner et al. 1999
pakalana		*Telosma*	*cordata*	HEAR 2010
palai‘ula	fern	*Microlepia*	*setosa*	Pukui and Elbert 1986
pia	Polynesian arrowroot	*Tacca*	*leontopetaloides*	Pukui and Elbert 1986
pili	Grass	*Heteropogon*	*contortus*	Wagner et al. 1999
pipipi	small mollusks	*Theodoxus*	*neglectus*	Pukui and Elbert 1986
pipipi	pearl oysters	*Pinctada*	*radaita* and other species	Pukui and Elbert 1986
plumeria		Multiple genera and species in the family Apocynaceae		
pōpolo	glossy nightshade	*Solanum*	*americanum*	Wagner et al. 1999
pua‘a	uncertain			
roi (not Hawaiian)	peacock grouper	*Cephalopholis*	*argus*	Randall2010
ta‘ape	bluestripe snapper	*Lutjanus*	*kasmira*	Randall 2010
ti		*Cordyline*	*fruticosa*	**Wagner et al. 1999**
‘uala	sweet potato	*Ipomoea*	*batatas*	Wagner et al. 1999
‘uhaloa	American weed	*Waltheria*	*indica*	Wagner et al. 1999

uhi	yam	*Dioscorea*	*alata*	Pukui and Elbert 1986
uhiuhi		*Senna*	*gaudichaudii*	Carr 2006
uhiuhi		*Caesalpinia*	*kavaiensis*	Carr 2006
uhu	parrotfish	Multiple genera and species in the family Scaridae	--	Hoover 1993
‘ulu	breadfruit	*Artocarpus*	*altilis*	Imada et al. 2005
‘upāpalu	larger cardinal fishes	*Apogon*	spp.	Hoover 2003
‘ū‘ū	*menpachi* , soldierfish	*Myripristis*	spp.*	Randall 2010
weke ula	goatfish (red)	*Mulloidichthys*	spp.	Hoover 1993
wi also known as *hīhī wai*	grainy snail	*Neritina*	*granosa*	Pukui and Elbert 1986
wiliwili		*Erythrina*	*sandwicensis*	Wagner et al. 1999
	avocado	*Persea*	Americana	Wagner et al. 1999
	banana	*Musa*	spp.	Wagner et al. 1999
	banana poka	*Passiflora*	spp.	
	coffee	*Coffee*	*arabica*	Wagner et al. 1999
	fountain grass	*Pennisetum*	*setaceum*	Wagner et al. 1999

	guava	*Psidium*	*guajava*	Wagner et al. 1999
	lemons, oranges	*Citrus*	*spp.*	
	lemongrass	*Cymbopogon*	*citratus*	Wagner et al. 1999
	lychee	*Litchi*	*chinensis*	HEAR 2010
	mango	*Mangifera*	*indica*	Wagner et al. 1999
	sisal	*Agave*	*spp.*	Wagner et al.1999

* spp. = multiple species

Appendix C Authorization and Release Form

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

P.O. Box 1114 Kailua, Hawai'i 96734 Ph: (808) 262-9972 Fax: (808) 262-4950

Job code: Kalaoa 4 afaanunu@culturalsurveys.com www.culturalsurveys.com

AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai'i (CSH) appreciates the generosity of the *kūpuna* and *kama'āina* who are sharing their knowledge of cultural and historic properties, and experiences of past and present cultural practices in the Kona District for the Cultural Impact Assessment CSH is preparing for the proposed Queen Ka'ahumanu Phase II Widening Project.

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

Out of courtesy we would like to reconfirm that:

1. If you provided an interview to CSH in the past (for Hawai'i Island), we may include all or parts of the prior interview/s published in past reports in the current report.

I, _____, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview and/or photograph to be used as specified.

_____
(Signature)

_____
(Date)

Appendix D Community Consultation Letter

Cultural Surveys Hawai'i, Inc.
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August 30, 2010

Aloha,

At the request of Group 70 International, Cultural Surveys Hawai'i Inc. (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed McKinley High School Athletic Complex Master Plan Project, Honolulu Ahupua'a, Kona District, O'ahu Island, TMK: [1] 2-3-009:001 (por.). Please see the attached figures: (Figure 1) Project map and (Figure 2) aerial photograph of the proposed Project area.

The proposed McKinley High School Athletic Complex Master Plan includes:

- A new gymnasium building which will achieve Leadership in Energy and Environment Design (LEED) Silver Certification;
- A renovation of the existing gymnasium for use as a practice facility;
- A pedestrian boulevard and two outdoor plazas;
- A relocation of the existing outdoor rifle range with a new semi-enclosed facility;
- A relocation of three existing tennis courts and addition of three new tennis courts;
- A relocation of the football/track field with 2,500 seat replacement bleachers;
- A relocation of the baseball field, new 500-1,000 seat bleachers, and batting cages;
- A new 100-stall parking lot and access road extension; and
- A new 2-story YMCA wellness center which includes a 50-meter swimming pool, 600-seat bleachers, and a 3-story parking structure (340 stalls).

The master plan also proposes a relocation of the softball stadium, a new Girls Athletic Locker Room, and a new access road as Phase 1 of the project. A Final Environmental Assessment (FEA) report was prepared for these Phase 1 facilities in June 2010 by Gerald Park Urban Planner. These Phase 1 facilities are currently under construction and will be considered as existing conditions.

Several McKinley High School buildings designed by the famous architects Vladimir Ossipoff and the firm Davis & Fishbourne were added to the Hawai'i State Inventory of Historic Properties (SIHP: Site 50-80-14-9926) on May 3, 1980 and to the National Register of Historic Places (NRHP) on August 11, 1980. They will not be adversely affected by the construction of the proposed McKinley High School Athletic Complex Project.

The purpose of the CIA is to gather information about the Project area and its surroundings through research and interviews with individuals that are knowledgeable about this area in order to assess potential impacts to the cultural resources, cultural practices and beliefs identified as a result of the planned Project. We are seeking your *kōkua* (assistance) and guidance regarding the following aspects of our study:

HONOLULU 21

Page 2

- **General history and present and past land use of the Project area. Although the redevelopment will be within the boundaries as stated above, this study will include the entire *ahupua'a* of Honolulu.**
- **Knowledge of cultural sites which may be impacted by future development of the Project area - for example, historic sites and / or archaeological sites.**
- **Knowledge of traditional gathering practices in the Project area vicinity, both past and ongoing.**
- **Cultural associations of the Project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama'āina* who might be willing to share their cultural knowledge of the Project area and the surrounding *ahupua'a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the Project area.**

In advance, we appreciate your assistance in our research effort. Please contact me Brian Kawika Cruz at bcruz@culturalsurveys.com or by phone at (808) 262-9972 if you would like to contribute to this study or if you have any questions or concerns.

Mahalo nui loa,

Brian Kawika Cruz
Cultural Researcher
Cultural Surveys Hawai'i

Appendix E Interview Questions

INTERVIEW QUESTIONS FOR HONOLULU 21 CIA

Part I: Contact information

1. Name: _____
2. Where were you born: _____
3. Where did you grow up:_____
4. When were you born:_____
5. Parents? Mother_____ Father _____
6. Occupation/Affiliation: _____
7. Area of residence: _____
8. How long have you lived here: _____
9. Personal and/or family connection to *ahupua'a*:_____
10. *Referrals:*_____

Part II: Historical information

11. Is there anything you would like to say about the general history of the area, or past and present land use?
12. How about personal and/or family history in the area?
13. Past land use? Past agricultural (ranching; rice, sugar cultivation), fisheries or other uses of the area (e.g., *lo‘i, kula, ko‘a*)?

Part III: Cultural and historic sites

14. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau, hale, kū‘ula, ilina*)?

Part IV: Gathering/hunting/fishing/etc. practices

15. Are you, is or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?
16. If you are, how did you learn the activity/ies and how long have you engaged in _____?
17. Can you tell me about any cultural practices from the past?
18. Knowledge of past or present cultural protocols observed?

Part V: Legends, stories and place, and sense of place

19. Is there anything you would like to say about legends, or stories about the project area?
20. Are there any names, traditions, or practices associated with the area and features of the landscape? Origin stories…?
21. Trails ancient or contemporary in the area? Who used/uses them?
22. *Mauka-makai* relationships?

Part VI: What else?

23. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?
24. Do you have any recommendations regarding site management or protection, and development in the proposed project area?
25. Did CSH miss anything? Is there anything else you would like to add?
26. Is there anyone else we should talk to about this cultural study?
27. IF SO, may I say that you referred CSH to him/her?

Appendix B
ARCHAEOLOGICAL INVENTORY SURVEY PLAN

DRAFT
Archaeological Inventory Survey Plan for the Proposed McKinley High School Athletic Complex Master Plan Project, Honolulu (Kewalo) Ahupuaʻa, Honolulu District (Kona Moku), Island of Oʻahu TMK: [1] 2-3-009:001 por.

Prepared for

Group 70 International, Inc.

Prepared by

Kelly L. Burke, M.Sc.

and

Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.

Kailua, Hawaiʻi

(Job Code: HONOLULU 20)

November 2010

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Management Summary

Reference	Archaeological Inventory Survey Plan for the Proposed McKinley High School Athletic Complex Master Plan Project, Honolulu (Kewalo) Ahupuaʻa, Honolulu District (Kona Moku), Island of Oʻahu, TMK: [1] 2-3-009:001 por. (Burke and Hammatt 2010)
Date	November 2010
Project Number (s)	Cultural Surveys Hawaiʻi, Inc. (CSH) Job Code HONOLULU 20
Investigation Permit Number	The fieldwork for the planned archaeological inventory survey investigation will likely be carried out under archaeological permit number 10-10 issued by the Hawaiʻi State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawaiʻi Administrative Rules (HAR) Chapter 13-13-282.
Project Location	The project area is a portion of the present McKinley High School campus, located north of and adjacent to Kapiʻolani Boulevard and between the Neal Blaisdell Exhibition Center on the west and Pensacola Avenue on the east. This area is depicted on the 1998 Honolulu U.S. Geological Survey 7.5-minute series topographic quadrangle.
Land Jurisdiction	City and County of Honolulu
Agencies	Department of Land and Natural Resources/State Historic Preservation Division
Project Description	The proposed project involves the construction of an athletic complex on the existing McKinley High School campus. This will involve the construction of new structures and the renovation or demolition of certain existing structures. A portion of the athletic complex is already covered under an approved monitoring plan (O'Hare et al. 2009), and therefore, will not be covered under this AIS plan. Associated ground disturbance will involve excavations related to the project area's redevelopment, to include: structural footing installation, utility installation, swimming pool construction, and landscaping. Surface grading is also anticipated for roadway improvements and parking area installation.
Project Acreage	The entire project area is approximately 22.1 acres, which includes an approximately 3.4-acre area that is covered under the O'Hare et al. 2009 archaeological monitoring plan.

Historic Preservation Regulatory Context	The proposed project is subject to Hawai‘i State environmental and historic preservation review legislation [Hawai‘i Revised Statutes (HRS) Chapter 343 and HRS 6E-42/Hawai‘i Administrative Rules (HAR) Chapter 13-284, respectively]. The current archaeological inventory survey plan was prepared in advance of a planned archaeological inventory survey of the proposed project area. The plan details the proposed methods of the inventory survey, per the requirements of HAR Chapter 13-276.
Summary of the Planned Inventory Survey Research Design	The research design for the planned archaeological inventory survey includes a 100% pedestrian inspection of the project area and a program of subsurface testing. The subsurface testing program will consist of the excavation of 28 (6 m long by 0.8 m wide) backhoe-assisted trench excavations for a total surface excavation of approximately 134 m² prior to demolition. Trench excavation methodology will consist of consist of saw cutting of the asphalt and concrete surfaces and the removal of overlying fill deposits with a backhoe (or by hand in any areas where mechanical assistance is not feasible). When undisturbed, *in situ* sand deposits are encountered, excavation will be conducted by hand. This hand excavation in sand deposits will be specifically undertaken to identify potential burial deposits prior to sand excavation with the backhoe. The sand will be carefully scraped off in thin layers in order to minimize any possible burial disturbance. Only after the sand deposits are confirmed to be culturally sterile, will a backhoe be utilized to resume excavation to the coral shelf or water table.

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Section 1 Introduction

1.1 Project Background

At the request of Group 70 International, Inc., Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this archaeological inventory survey plan (AISP) for the McKinley High School Athletic Complex, Honolulu (Kewalo) Ahupua‘a, Honolulu (Kona Moku) District, Island of O‘ahu, TMK: [1] 2-3-009:001. The project area is located north of and adjacent to Kapi‘olani Boulevard, between the Neal S. Blaisdell Exhibition Center to the west and Pensacola Avenue to the east. This area is depicted on the 1998 Honolulu U.S. Geological Survey (U.S.G.S.) 7.5-minute topographic quadrangle (Figure 1), on an O‘ahu Island tax map (Figure 2), and on a modern aerial photograph (Figure 3). A section within the current project area has previously been addressed by CSH in a monitoring plan (O’Hare et al. 2009) that has already been approved by the State Historic Preservation Division (SHPD; log No. 20100.2065; doc No. 1001NM43); therefore, this area will not be covered in this AISP. The O’Hare et al. (2009) study area is also shown on Figure 1 to Figure 3.

The Master Plan for the McKinley High School Athletic Complex includes the construction of a replacement track/football/soccer field, a 500-1,000 seat baseball field, a 500-1,000 seat softball field, a 50-meter swimming pool, six tennis courts, a new gym, a replacement enclosed rifle range, a new YMCA wellness center, locker rooms/shower facilities, and parking, and the renovation of an existing gym (Figure 4 and Figure 5). The softball stadium and the girl’s locker room and shower facility were included within the O’Hare et al. (2009) study area. The entire project area is approximately 22.1 acres, which includes the approximately 3.4-acre area (softball field and girl’s locker room and shower facility) that is covered under O’Hare et al. (2009).

Several McKinley High School buildings designed by the famous architect Vladimir Ossipoff and the firm Davis & Fishbourne were added to the Hawai‘i State Inventory of Historic Properties (SIHP; SIHP# 50-80-14-9926) on May 3, 1980 and to the National Register of Historic Places (NRHP) on August 11, 1980. All of these historic buildings are located on the northern portion of the campus, while the current project area is located on the southern, and to a smaller degree, western, portion of the campus. The historic buildings will not be adversely affected by the construction of the new athletic complex.

This AISP was prepared to support the proposed project’s historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-42 and is intended for review and approval by the City and the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR). The current AISP was prepared in advance of a planned archaeological inventory survey of the proposed project area. This plan details the proposed methods of the inventory survey, per the requirements of Hawai‘i Administrative Rules HAR Chapter 13-13-276. As will be detailed below, many human burials (traditional Hawaiian and historic) as well as pre-contact Hawaiian and historic cultural deposits have been encountered in the vicinity of the project area.

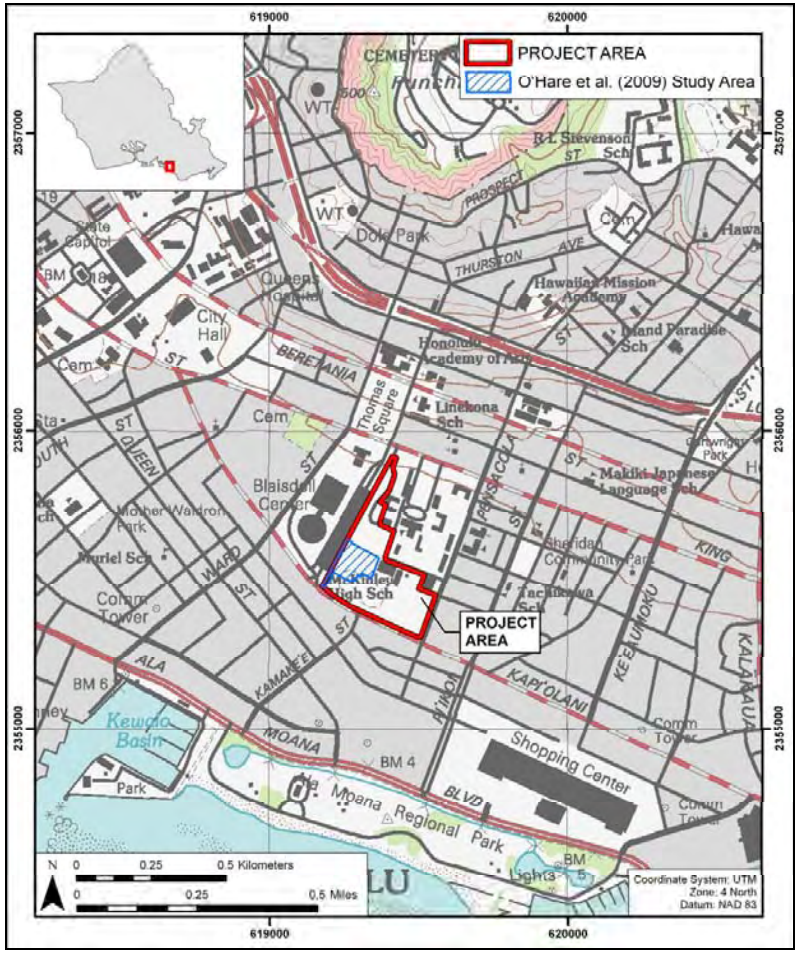

Figure 1. U.S. Geological Survey 7.5-minute topographic map (1998, Honolulu Quadrangle) showing location of project area

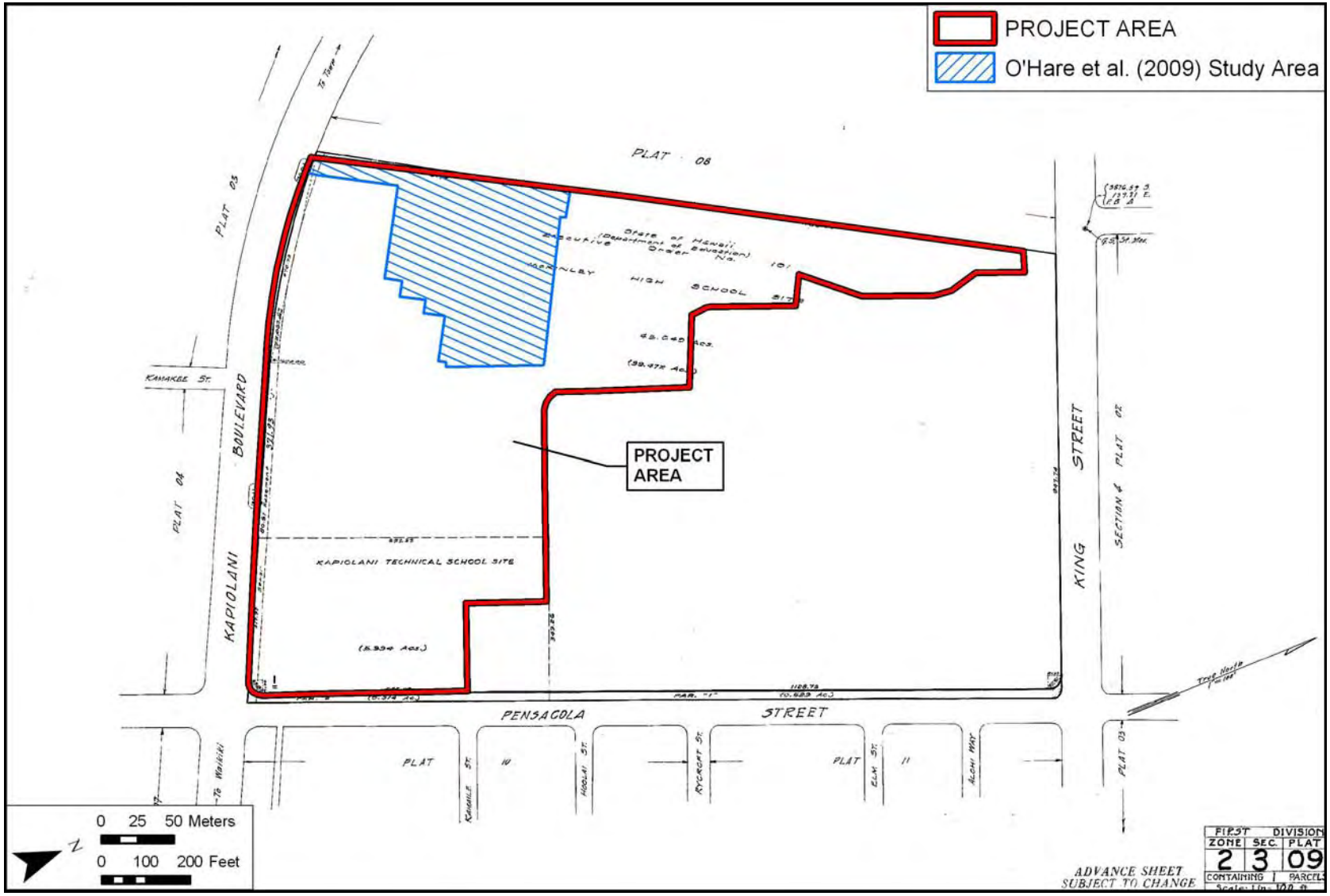

Figure 2. Tax Map [1] 2-3-009; project area is in Parcel 001 (Hawai‘i Tax Map Key Service)

Figure 3. Aerial photograph of the McKinley High School campus with project area outlined (Source: Google Earth 2008)

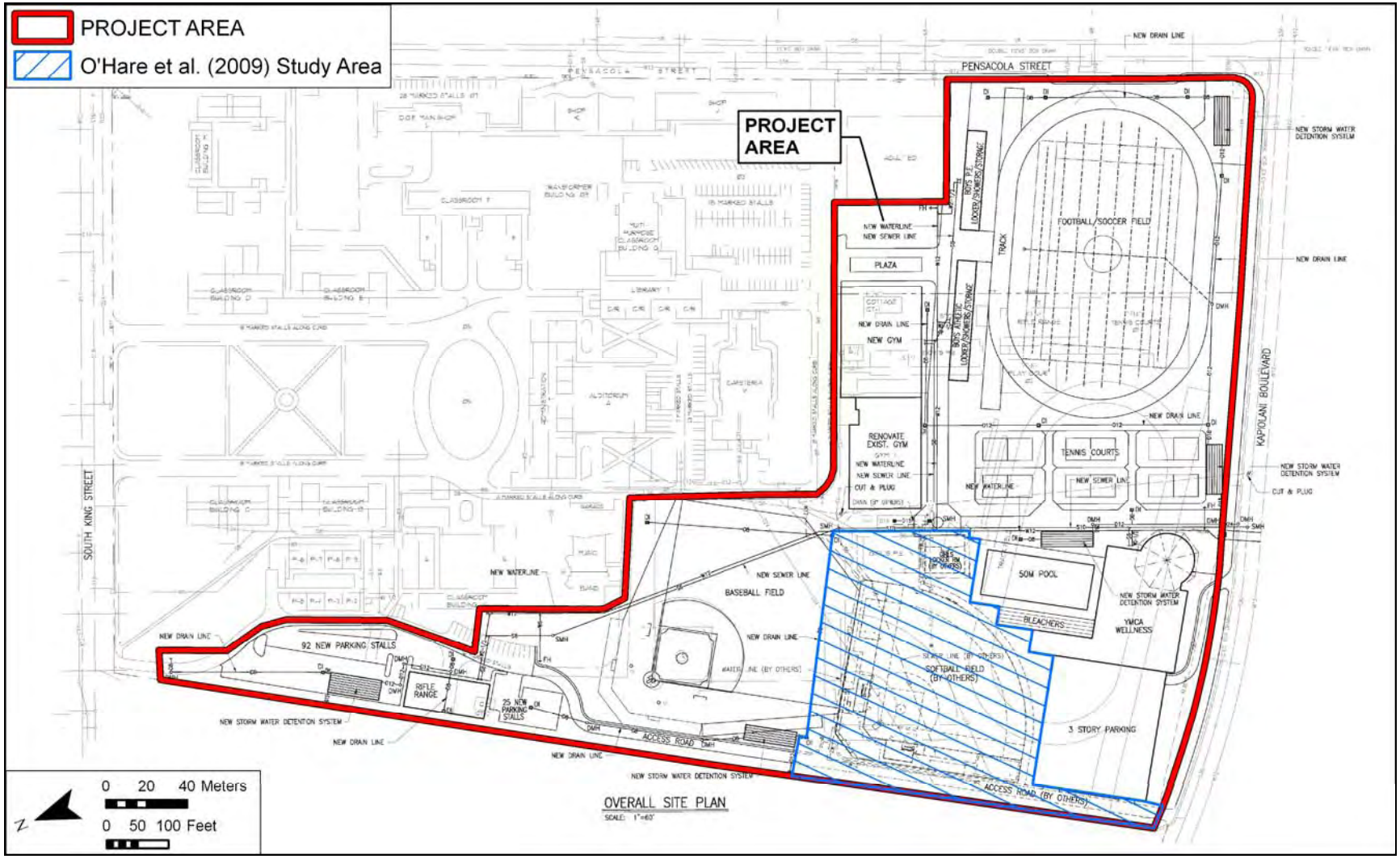

Figure 4. McKinley High School Athletic Complex Master Plan showing locations of proposed redevelopment (source: Group 70 International, Inc. 2010)

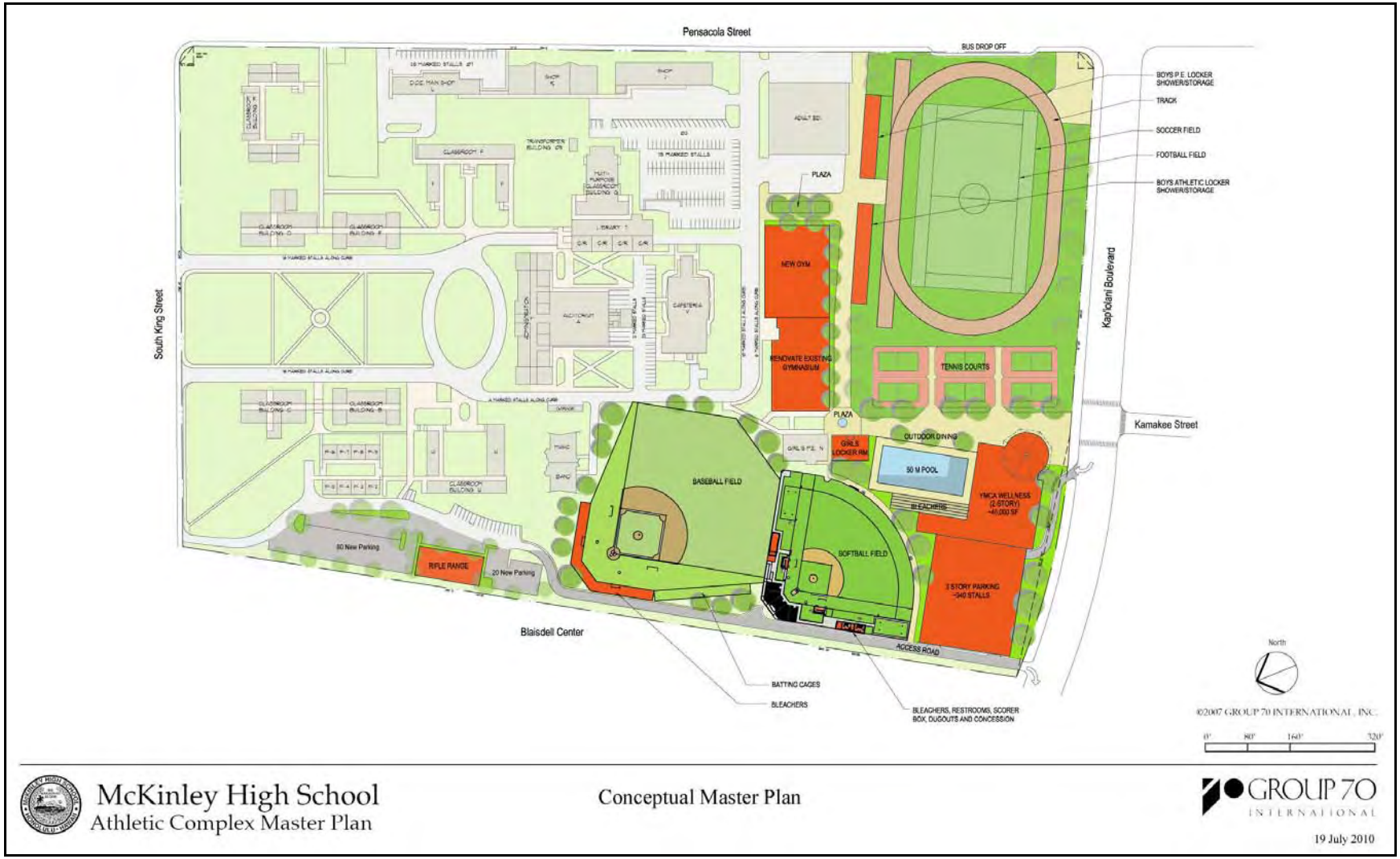

Figure 5. McKinley High School Athletic Complex Master Plan showing locations of proposed redevelopment (source: Group 70 International, Inc. 2010)

1.2 Environmental Setting

1.2.1 Natural Environment

The project area is within a topographic section of O‘ahu called the Honolulu Plain, an area generally less than 4.5 m, or 15 ft, above sea level (Davis 1989:5). The Honolulu Plain is stratified with late-Pleistocene coral reef substrate overlaid with calcareous marine sand or terrigenous sediments, and stream-fed alluvial deposits (Armstrong 1983:36). The topsoil stratum consists of fill land, mixed (Fl), containing areas filled with material dredged from the ocean and hauled from nearby areas (Foote et al. 1972).

The modern Hawaiian shoreline configuration is primarily the result of: (1) the rising sea level following the end of the Pleistocene (Stearns 1978; Macdonald et al. 1983); (2) the mid to late Holocene ca. 1.5-2.0 m high-stand of the sea (see summary in Dye and Athens 2000:18-19); and (3) pre-contact and post-contact human landscape modification. At the end of the Pleistocene, between approximately 20,000 and 5-6,000 years ago, water previously locked in glacial ice returned to the world’s oceans, and the sea level rose over 100 m to approximately its current level. In the vicinity of the current project area, rising sea levels flooded the previously dry, earlier Pleistocene reef deposits, which had formed hundreds of thousands of years previously when sea levels were comparable to modern levels. When sea levels reached approximately modern levels, the now coastal regions became depositional environments where for tens of thousands of years previously, during the lower sea levels, they had been erosional environments.

A high stand of the sea for the Hawaiian Islands, ca. 1.5 to 2.0 m above present sea level, has been well documented from between 4,500 and 2,000 years ago (Stearns 1978; Athens and Ward 1991; Fletcher and Jones 1996; Grossman and Fletcher 1998; Grossman et al. 1998; Harney et al. 2000). During this high stand, there appears to have been an increase in coral reef production and the production of detrital reef sediments. Littoral environments appear to have been augmented substantially by the deposition of marine sediments. “What this means is that the great shoreline sand berms must have developed around the islands at this time because this was when calcareous sand was being produced and delivered to the shorelines in large quantities” (Dye and Athens 2000:19).

The Honolulu coastline was likely greatly affected by the deposition of marine sediments during this elevated sea level. The subsequent drop in sea level to its present level, ca. 2000 years ago, most likely created a slightly erosional regime that may have removed sediments deposited during the preceding period of deposition (Dye and Athens 2000:19). However, the net gain in sediments would have been substantial. In 1911, it was estimated that about one-third of the Honolulu Plain was a wetland (Nakamura 1979:65, citing a Hawaiian Territory Sanitary Commission report). Pre-contact Hawaiians used the lagoonal/estuary environment of the Honolulu plain to construct fishponds. Fishpond walls served as sediment anchors for the accumulation of detrital reef sediments. They also likely affected long shore sedimentary transport, resulting in new littoral deposition and erosion patterns. In the post-western contact period, when the fishponds were no longer utilized, they became obvious locations for the deposition of fill. These reclaimed areas provided valuable new land near the heart of growing urban Honolulu.

The undeveloped natural condition of the Kaka‘ako/Kewalo area once consisted of low-lying marshes, tidal flats, fish ponds, reef areas, and limited areas of dry land. Beginning in the late nineteenth century, these low-lying areas were filled in and then developed, which permanently changed the area into its present fully-urbanized character. Foote et al. (1972) show the main portion of the athletic complex project area as fill land, mixed (FL), as shown in Figure 6. The authors report that:

> This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources [Foote et al 1972:31].

The northwestern portion of the athletic complex project area is within Makiki Clay Loam, 0-2 percent slopes (MkA). The Makiki series consists of deep, well drained soils that formed in material weathered from alluvium mixed with ash and cinders. Makiki soils are located on alluvial fans and terraces (Foote et al. 1972:91).

While fill materials have been found in several portions of the project area during previous archaeological investigations, Jaucas sand (JaC) was also discovered underneath some of the land surface. Foote et al. (1972:48) describe Jaucas sand as:

> …single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile.

In this area of the Honolulu District, rainfall averages less than 30 inches per year (Armstrong 1983:62). Northeasterly trade winds prevail throughout the year, although their frequency varies from more than 90% during the summer months to 50% in January; the average annual wind velocity is approximately 10 miles per hour (Wilson Okamoto 1998:2-1). Vegetation within the project area is limited to a few ornamental trees in grass parking lot dividers and along the project area margins.

1.2.2 Built Environment

The project area is situated at the southern, *makai* (seaward), and western ends of the McKinley High School campus. The northern, *mauka* (inland), portion of the campus is covered with administrative and educational buildings. The project area is mostly an open area covered with mown grass and a few trees. A dirt athletic track, tennis courts, a rifle range, and several buildings are also present within the project area.

Figure 6. Soil information over U.S. Geological Survey topographic map (soil information from Foote et al. 1972)

Section 2 Legendary and Traditional Background

2.1 Overview for Kaka‘ako

The project area is within the Kaka‘ako Community Development District (*Mauka* Area), a modern district designated for planned development. However, the boundary of this modern development district is not the same as the ancient boundary of Kaka‘ako. The original location and extent of the area called Kaka‘ako is ambiguous. The ethnographer Henry Kekahuna (1958:4), who was born in Hawai‘i in 1891 and was a long-time resident of Honolulu, placed it “on the Ewa side of Kuloloia Stream where the Honolulu Iron Works and Fort Armstrong are now,” an area now covered by One Waterfront Plaza (between South and Punchbowl Streets). Kekahuna also related that “there were formerly scattered dunes of white sand there. Gilbert Islanders (Kilipaki) squatted there and made a living by fishing, collecting coral for curios, and catching octopus.” On an 1891-1902 map, F. S. Dodge placed Kaka‘ako between Punchbowl, Pohukaina, and South Streets and Ala Moana Blvd. On many early maps, only the area near the Kaka‘ako Receiving Station is labeled as Kaka‘ako.

Only four 1850’s Land Commission Awards list their location as within the ‘*ili* (small land division) of Kaka‘ako. These are also generally located adjacent to the sea, east of Punchbowl Street, between Pohukaina Street and Reed Lane.

2.2 Place Names

Place name translations presented without attribution in this subsection are from *Place Names of Hawai‘i* (Pukui et al. 1974), unless otherwise indicated. An 1881 map of O‘ahu by R. Covington indicates that the project area is within the ‘*ili* (small land division within an *ahupua‘a*) of Kewalo, east of Kaka‘ako ‘Ili and *mauka* of Kukuluāe‘o ‘Ili (Figure 7).

Kewalo literally means “the calling (as an echo).” Land Commission Award and other historic-era documents identify it as the area between Cooke and Sheridan Streets, *mauka* of Queen Street. According to Pukui et al. (1974:109), “outcasts (*kauwā*) intended for sacrifice were drowned here” (see Section 2.3.1 below). Kekahuna (1958:4) said that at one time, Kewalo also had an area of sand beach, where various sports, such as surfing, were performed. According to Pukui et al. (1974:145), a Honolulu section in Pawa‘a (east of the project area) is called Mānalo (meaning “potable”) after a spring once located near McKinley High School. No other information on this spring or its location is given by the authors.

Kaka‘ako is not translated in the definitive work, *Hawai‘i Place Name*s by Pukui et al. (1974), but the Hawaiian word *kākā‘āko* is translated as “dull, slow” in the *Hawaiian Dictionary* (Pukui and Elbert 1986:110). It is possible that this place name refers to the abundant standing water characteristic of this once marshy place. Thrum (1922:639) translated the word as “prepare the thatching” (*kākā* = to chop, beat, or thresh; *ako* = thatch). If Thrum’s translation is correct, it could be related to the fact that salt marshes, such as areas like Kaka‘ako, were excellent places to gather tall *pili* grass, which the Hawaiians traditionally used to thatch their houses (see Section 2.3.1 below for Kewalo legend).

Figure 7. Portion of 1881 map of O‘ahu by R. Covington, placing the project area in the ‘*ili* of Kewalo (Hawai‘i Land Survey Division, Registered Map No. 1381)

Kukuluāe‘o, translates literally as the “Hawaiian stilt (bird),” *Himantopus himantopus*, and from the word *kukuluāe‘o,* which means “to walk on stilts.” Pukui et al. (1974:123) describe the area as “formerly fronting Ke-walo Basin” and “containing marshes, salt ponds, and small fishponds,” an environment well suited for this type of bird (Griffin et al. 1987:36). The ethnographer Henry Kekahuna (1958:4) described Kukuluāe‘o as an area where salt was formerly made.

2.3 *Mo‘olelo* Associated with Place Names

The current project area is mainly located in the land of Kewalo. On modern maps, the entire project area is within the Kaka‘ako District. The name Kukuluāe‘o does not appear in any legends in the *Hawaiian Island Legends Index* (Gotanda 1989) or in the index to *Fornander's Collection of Hawaiian Antiquities and Folklore*, *Volumes IV, V, and VI* (Fornander 1916-20). There are several mentions of the area known as Kewalo and one mention of Kaka‘ako in various legends, and Kaka‘ako and Kukuluāe‘o are mentioned in some post-contact chants.

2.3.1 Kewalo

Kewalo once had a freshwater spring located in its central portion (current location unknown), as recorded in the proverb “*Ka wai huahua‘i o Kewalo*,” which translates as “the bubbling water of Kewalo.” Two springs are mentioned in a traditional story of the Waters of Ha‘o. This legend tells of two children of the chief Ha‘o who ran away from their cruel stepmother. They stayed for a time with the caretakers of Kewalo Spring, which may have been located close to the trail that connected Waikīkī and Honolulu. The children left when they heard that the chiefess had sent men to look for them. The two children followed the moonlit trail across the plain toward Kou (Honolulu), but finally collapsed from weariness and thirst. In a dream, the boy’s mother told him to pull up a plant close to his feet. When he did, he found a spring under the plant, which was called the Water of Ha‘o, or Kawaiaha‘o. This spring is located at the western end of the trail, near Kawaiaha‘o Church (Pukui and Curtis 1988:87-89).

The Kewalo area once had a famous fishpond that was used to drown members of a pariah caste (*kauwā*) or *kapu* (taboo) breakers as the first step in a sacrificial ritual known as *Kānāwai Kaihehe‘e* (Kamakau 1991:6) or *Ke-kai-he‘ehe‘e*, which translates as “sea sliding along,” suggesting that the victims were slid under the sea (Westervelt 1991:16). Kewalo is described as:

> A fishpond and surrounding land on the plains below King Street, and beyond Koula. It contains a spring rather famous in the times previous to the conversion to Christianity, as the place where victims designed for the Heiau of Kanelaau on Punchbowl slopes, was [sic.] first drowned. The priest holding the victim’s head under water would say to her or him on any signs of struggling, “Moe malie i ke kai o ko haku.” “Lie still in the waters of your superiors.” From this it was called Kawailumalumai, “Drowning waters” [Sterling and Summers 1978:292].

Kō‘ula (meaning “red sugar cane”) is the area around Thomas Square and the *mauka* portion of the Ward estate, suggesting that the Kawailumalumai Pond may have been east (“beyond Kō‘ula”) of the Ward estate. It may be part of the pond complex (five ponds) awarded to Koalele as LCA 3169, north of the project area.

Kewalo is mentioned in a legend as a marsh near the beach, where tall *pili* grass was growing. A man named Kapoi went to this area to get thatching for his house. While there, Kapoi found seven owl eggs and took them home to cook for his supper. An owl perched on the fence surrounding his house and cried out “O Kapoi, give me my eggs!” After several such pleas, Kapoi returned the eggs. In return, the owl became his ‘*aumakua* (family god) and instructed him to build a *heiau* (pre-Christian place of worship) named Mānoa. Kapoi built the *heiau,* placed some bananas on the altar as a sacrifice, and set the *kapu* days for its dedication. The king of O‘ahu, Kākuhihewa, who was building his own *heiau* in Waikīkī, had made a law that if any man among his people erected a *heiau* and set the *kapu* before him, that man should die. Kapoi was seized and taken to the *heiau* of Kūpalaha, at Waikīkī. Kapoi’s ‘*aumakua* owl asked for aid from the king of the owls at Owl’s Hill (Pu‘u Pu‘eo) in Mānoa, who gathered all of the owls of the islands. They flew to Kūpalaha and battled the king’s men, who finally surrendered. From this time, the owl was considered a powerful *akua* (god). The battle area was known as Kukaeunahio-ka-pueo, which means “the confused noise of owls rising in masses” (Thrum 1998:200-202; Westervelt 1991:135-137).

Kewalo was the birthplace of the great chief Hua-nui-ka-la-la‘ila‘i, as mentioned in this *mele* (story) chanted by Kamakau (1991:24):

‘O Hua-a-Kamapau ke ‘li‘i	Hua-a-Kamapau the chief
O Honolulu o Waikīkī	O Honolulu, of Waikīkī
I hanau no la i kahua la i Kewalo,	Was born at Kewalo,
‘O Kālia la kahua	Kālia was the place [the site]
O Makiki la ke ēwe,	At Makiki the placenta,
I Kānelā‘au i Kahehuna ke piko,	At Kānelā‘au at Kahehuna the navel cord,
I Kalo i Pauoa ka ‘a‘a;	At Kalo at Pauoa the caul;
I uka i Kaho‘iwai i	Upland at Kaho‘iwai, at
Kanaloaho‘okau . . .	Kanaloaho‘okau . . .

2.3.2 Kaka‘ako

Kaka‘ako is mentioned in Moke Manu’s (1998:230-249) version of the legend of Kū‘ula, the god presiding over the fish, and his son ‘Ai‘ai, who was the first to teach the Hawaiians how to make various fishing lines and nets, the first to set up a *ko‘a kū‘ula*, a rock shrine on which the fishermen would place their first catch as an offering to Kū‘ula, and the first to set up *ko‘a ia*, fishing stations where certain fish were known to gather. Leaving his birthplace on Maui, ‘Ai‘ai traveled around the islands, establishing *ko‘a kū‘ula* and *ko‘a ia*. On O‘ahu, he landed first at Ka‘ena Point, then traveled around the island.

> Aiai came to Kalia [Waikīkī] and so on to Kakaako. Here he was befriended by a man named Apua, with whom he remained several days, observing and listening to the murmurs of the chief named Kou. This chief was a skillful haiku [*Katsuwonus pelamis*; bonito] fisherman, his grounds being outside of Mamala until you came to Moanalua. There was none so skilled as he, and generous withal, giving akus to the people throughout the district.
>
> As Aiai was dwelling with his friend Apua at Kakaako, he meandered off one day along the shore of Kulolia [Kuloloia] and so on to Pakaka and Kapapoko [Manu 1998:242].

This story mentions several place names near the Kaka‘ako area, including the Kuloloia shore, Pākākā, an ‘*ili* or *heiau* at Honolulu Harbor, and Kapapoko, an eating house near the harbor used by Ka‘ahumanu, wife of Kamehameha I (‘Ī‘ī 1959:66). In Hawaiian legends, the names of people often point to the place where they resided. Thus, the friend Apua may have lived at ‘Āpua, a small ‘*ili* near the western boundary of the Kaka‘ako area.

2.3.3 Kukuluāe‘o

The chief Hua, born in Kewalo, was famous for his love of cultivation and his care for the people. His *heiau,* called Pu‘ukea, was in Kukuluāe‘o in Honolulu; it is mentioned in a traditional *wānana* (prophecy) recorded by Kamakau (1991:24-25):

[*Ka makaua ua kahi o ‘Ewa*]	[The increasing “first rain” of ‘Ewa]
Ua puni ka i‘a o Mokumoa,	Overcomes the fish of Mokumoa,
Ua kau i‘a ka nene;	Washes up fish to the nene plants;
Ua ha‘a kalo ha‘a nu;	Lays low the taro as it patters down;
Ha‘a ka i‘a o kewalo,	Lays low the fish of Kewalo,
Ha‘a na ‘ualu o Pahua,	Lays low the sweet potatoes of Pahua,
Ha‘a ka mahiki i Pu‘ukea,	Lays low the mahiki grass at Pu‘ukea,
Ha‘a ka unuunu i Pele‘ula,	Lays low the growing things at Pele‘ula
Ha‘a Makaaho i ke ala.	Lays low Makaaho [Makāho] in its path
E Kū e, ma ke kaha ka ua, e Kū,	O Kū, the rain goes along the edge [of the island], O Kū
[*I ‘ai ‘na ka i‘a o Maunalua*] . . .	[Eating” the fish of Maunalua] . . .

The chant mentions the *mahiki* grass of Pu‘ukea Heiau. The Hawaiian term *mahiki* means “to peel off” (Andrews 2003:369). The word was also used to describe a rite to exorcise an evil spirit, as the skilled *kahuna* (priest) “peeled” the malicious spirit from the afflicted. Used in the ritual was a shrimp called *mahiki* or a native grass called *mahiki*. *Mahiki*, or ‘*aki‘aki*, is a tufted rush (*Sporobolos* sp.) found near the seashore. The ethnologist, Mary Pukui, states that even during her youth, parents put “*tī* leaves, or *hala*, or *‘aki‘aki* grass, in a little sea-salt water and [would] have the child drink it” to rid them of badly-behaving spirits (Pukui et al. 1972:163). The use of this grass in a ritual may explain its association with a ceremonial *heiau*, or it may simply be that the Kukuluāe‘o coast was a good habitat and thus a favored place for healers to collect this type of grass.

The literal meaning of Pu‘ukea is “white hill” (although it may have alternate meanings). Pu‘ukea is also the name of a small land division within the ‘*ili* of Kukuluāe‘o, mentioned in at least two Land Commission Awards (LCA 1502 and 1504). LCA 1504 was located near the junction of Halekauwila and Cooke Streets. It is fairly common for a *heiau* to have the same name as the ‘*ili* it is located within, so it is possible that Pu‘ukea Heiau was also near the junction of Halekauwila and Cooke streets. The majority of the house sites in the mid-nineteenth century in Kukuluāe‘o were located near Halekauwila and Queen Streets, *mauka* of the low-lying coastal swamplands on higher, dry ground. It is possible that the *heiau* platform, or the area that it was built on, was one of the few “high spots” in the flat, low-lying swamp that surrounded it, and thus gained the name *pu‘u kea* (white hill).

Thomas Thrum (1906:37-47), who made several lists and surveys of *heiau*, does not mention Pu‘ukea Heiau. In his report on O‘ahu sites in the early 1930s, McAllister (1933:80) says of Honolulu: “Information regarding former sites within the present limits of Honolulu must come entirely from literary sources.” He does mention Pākākā Heiau, once the main royal temple in Honolulu. This *heiau* would have been located around the foot (*makai end*) of Fort Street. He does not list Pu‘ukea Heiau, which Kamakau placed in Kukuluāe‘o, but he does note that Peter Corney, a visitor to the island in 1819, saw several *heiau* (*morai*) along the Honolulu shore:

> There are several morais, or churches in the village, and at new moon the priests, chiefs and hikanees (aikane) [counselors] enter them with offerings of hogs, plantains, and cocoanuts, which they set before the wooden images. The place is fenced in, and have pieces of white flags flying on the fences [Corney 1896:101].

The *heiau* of Pu‘ukea and an area called Kaka‘ako are mentioned in the chant “The Battle of Nu‘uanu,” which concerns the 1795 invasion and conquer of O‘ahu by Kamehameha I. One section of the chant describes locations in Honolulu, possibly listing them from east to west:

75 *Lauwili i Pūkē (Pu‘ukea) i Ka-imu-hai-kanaka*,
76 *I Kai-kua, i Kakaako, i Mamala*,
77 *I ke kai o Kuloloia, Pakaka*,
78 *I ka-imu-hai-kanaka, i ka-wai-apuka-Kāne* [Kala‘ikuahulu 1880:131].

2.3.4 Summary of Legendary and Traditional Accounts

From the legendary accounts, it can be seen that Kukuluāe‘o, Kaka‘ako, and Kewalo were traditionally noted for their fishponds and salt pans, for the marsh lands where *pili* grass and other plants could be collected, for ceremonial sites such as Pu‘ukea Heiau, Kewalo Spring, and Kawailumalumai Pond at which sacrifices were made, and for the trails that allowed transport between the more populated areas of Waikīkī and Honolulu. Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources. Some commoners probably also lived in the area, possibly adjacent to the ponds and the trails.

Section 3 Historic Background

3.1 Early Post-Contact History and Population Centers

Kewalo is located between two centers of population, Kou and Waikīkī, on the southern shore of pre-contact O‘ahu. In Waikīkī, a system of taro *lo‘i* (irrigated fields) fed by streams descending from Makiki, Mānoa, and Pālolo valleys blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou (the area of downtown Honolulu surrounding the harbor) possessed shoreward fishponds and irrigated fields watered by ample streams descending from Nu‘uanu and Pauoa Valleys. The pre-contact population and land use patterns of Kewalo may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with them. Thus, the attempt to reconstruct the Kewalo region (and the present study area) as it existed for the Hawaiians during the centuries before western contact and the modern urbanization that has reconfigured the landscape must begin with accounts of Kou and Waikīkī.

Waikīkī is actually the name of a large *ahupua‘a* (traditional land division) encompassing lands stretching from Honolulu to Maunalua Bay. Within that *ahupua‘a*, by the time of the arrival of Europeans during the late eighteenth century, the area today known as Waikīkī had long been a center of population and political power on O‘ahu. According to Martha Beckwith (1940:383), by the end of the fourteenth century, Waikīkī had become “the ruling seat of the chiefs of O‘ahu.” The pre-eminence of Waikīkī continued into the eighteenth century and is confirmed by the decision of Kamehameha, in the midst of unifying control of the islands, to reside there after wresting control of O‘ahu by defeating the island’s chief, Kalanikūpule.

Chiefly residences were only one element of a complex of features sustaining a large population that characterized Waikīkī up through pre-contact times. Beginning at least by the fifteenth century, a vast system of irrigated taro fields was constructed, extending across the littoral plain from Waikīkī to lower Mānoa and Pālolo valleys. This field system, an impressive feat of engineering, the design of which is traditionally attributed to the chief Kalamakua, took advantage of streams descending from Makiki, Mānoa, and Pālolo Valleys, which also provided ample fresh water for the Hawaiians living in the *ahupua‘a*. Water also was available from springs in nearby Mō‘ili‘ili and Punahou. Closer to the Waikīkī shoreline, coconut groves and fishponds dotted the landscape. A continuous zone of population and cultivation from the shoreline of present day Waikīkī Beach extended north, well into Mānoa Valley. The western and eastern bounds of this zone are less clear, and there are no specific references to Waikīkī’s abundance reaching into the Kewalo region.

A basic description of Honolulu/Kou up until the time of western contact is given by E. S. Craighill Handy and Elizabeth Handy:

> What is now Honolulu was originally that flatland area between the lower ends of Nu‘uanu and Pauoa Valleys and the harbor. [W. D.] Westervelt . . . wrote that ‘Honolulu was probably a name given to a very rich district of farm land near what is now . . . the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs at the time of Kakuhihewa’. . . . It is probable that the chief referred to by Westervelt took his name from the harbor and

> adjoining land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou. . . . The number of heiau in this area indicates that it was a place of first importance before the era of foreign contact [Handy and Handy 1972:479].

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a still predominantly native Hawaiian environment—still a “village”—on the brink of western-induced transformations:

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity. . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town. . . . Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (arum esculentum) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes [Bingham 1847:92-93].

The Kewalo region would have been in Bingham’s view as he stood atop “Punchbowl Hill” looking toward Waikīkī to the south; it would have comprised part of the area he describes as the “plain of Honolulu” with its “fishponds and salt making pools along the seashore” (Bingham 1847:92-93).

Another visitor to Honolulu in the 1820s, Capt. Jacobus Boelen, hints at the possible pre-contact character of Honolulu and its environs, including the Kewalo area:

> It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name (which as a result of variations in pronunciation is also written as Honolulu, and on some maps, Honoonoono). The landlocked side in the northwest consists mostly of tarro [sic.] fields. More to the north there are some sugar plantations and a sugar mill, worked by a team of mules. From the north toward the east, where the beach forms the bight of Whytetee, the soil around the village is less fertile, or at least not greatly cultivated [Boelen 1988:62].

Boelen’s description implies that the Kewalo region and the present study area are within a “not greatly cultivated” region of Honolulu, perhaps extending from Pūowaina (Punchbowl Crater) at the north through Kaka‘ako to the Kālia portion of Waikīkī in the east.

A map of Honolulu drawn in 1855 by Joseph de LaPasse, a lieutenant aboard the French vessel *L’Eurydice*, pictures the project parcels within a coastal marsh (Figure 8). The map shows fishponds and taro *lo‘i* (irrigated patches, shown as rectangles) surrounding the project area, and massed around the streams descending from Nu‘uanu and Mānoa Valleys. Houses are scattered along King Street and in a line that will later be covered by Queen Street. The depicted

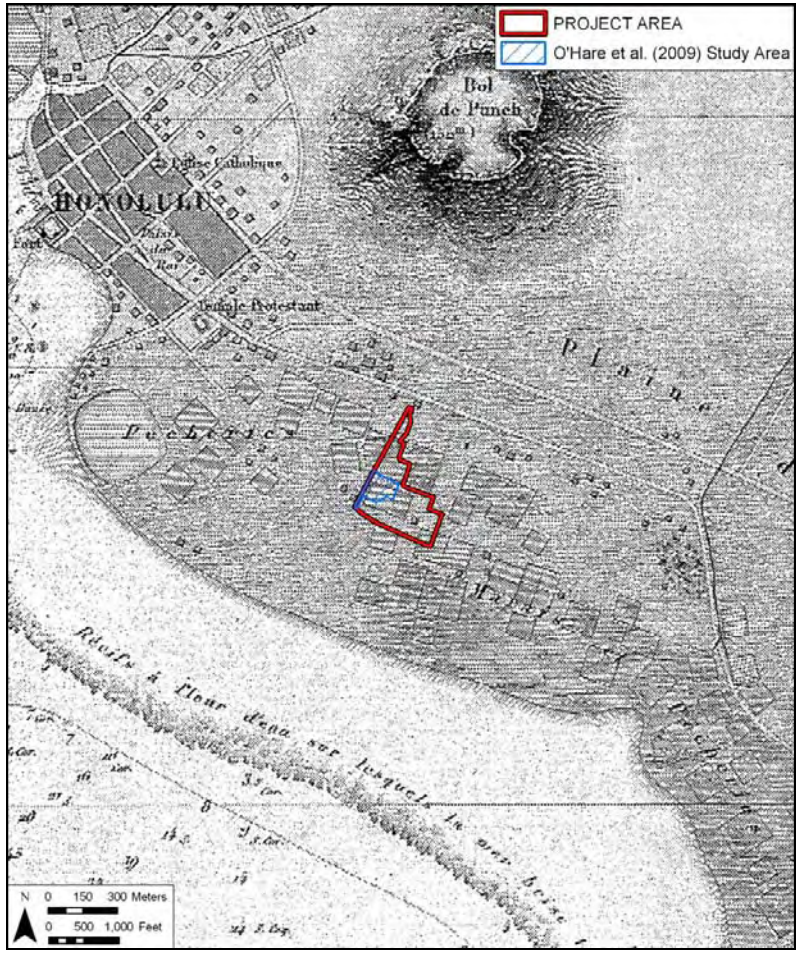

Figure 8. Portion of 1855 map of the Honolulu District by Lt. Joseph de LaPasse; project area is within and near fishponds and salt ponds (map reprinted in Fitzpatrick 1986:82-83)

areas of population and habitation concentration probably reflect distortions caused by the post-contact shift of Hawaiians to the area around Honolulu harbor, the only sheltered landing on O‘ahu and the center of increasing trade with visiting foreign vessels. Kamehameha himself had moved from Waikīkī to Honolulu in 1809.

A clearer picture of Kewalo and the present study area develops with accounts of other visitors to and settlers of Honolulu during the first half of the nineteenth century. Gorman D. Gilman, who arrived in Honolulu in 1841, recalled the limits of Honolulu during the early 1840s in a memoir:

> The boundaries of the old town may be said to have been, on the *makai* side, the waters of the harbor; on the *mauka* side, Beretania street; on the Waikīkī side [i.e. the area just beyond Punchbowl Street], the barren and dusty plain, and on the Ewa [west] side, the Nuuanu Stream [Gilman 1904:97].

Gilman further describes the “barren and dusty plain” beyond (east of) Punchbowl Street:

> The next and last street running parallel [he had been describing the streets running *mauka-makai*] was that known as Punchbowl Street. There was on the entire length of this street, from the *makai* side to the slopes of Punchbowl, but one residence, the two-story house of Mr. Henry Diamond, *mauka* of King Street. Beyond the street was the old Kawaiahao church and burying ground. A more forsaken, desolate looking place than the latter can scarcely be imagined. One, to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horses and cattle had free access to the whole place [Gilman 1904:89].

That the environs of the missionary enclave and Kawaiaha‘o Church were indeed “forsaken” and “desolate looking” in the 1820s when the missionaries first settled there is confirmed in the memoirs of the American missionary C. S. Stewart who, arriving on Maui after living at the mission, declared Lahaina to be “like the delights of an Eden” after “four weeks residence on the dreary plain of Honoruru” (Stewart 1970:177). It is likely that these descriptions of the Honolulu plain also include (at least for western sensibilities) the Kewalo region.

3.2 Mid-Nineteenth Century to Early Twentieth Century

The Organic Acts of 1845 and 1846 initiated the process of the Māhele (the division of Hawaiian lands), which introduced private property into Hawaiian society. In 1848, the crown, the Hawaiian government, and the *ali‘i* (chiefs) received their land titles. The common people (*maka‘āinana*) received their *kuleana* awards (individual land parcels) in 1850. It is through records for Land Commission Awards (LCA) generated during the Māhele that the first specific documentation of life in Kewalo and Kukuluāe‘o, as it had evolved up to the mid-nineteenth century, come to light.

Among the first descriptions of Kewalo by the Hawaiians themselves are the testimonies recorded during the 1840s in documents associated with LCA claims of the Māhele. The LCA records indicate that the traditional Hawaiian usage of the region and its environs may have been confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from Makiki and Mānoa Valleys. However, the testimonies do indicate that the area was inhabited and was shaped

by Hawaiians before the nineteenth century. The LCA records also reveal that, midway through the nineteenth century, taro cultivation, traditional salt making and fishpond farming activities continued within Kewalo/Kukuluāe‘o area. These activities and the land features that supported them would be eliminated, or buried, during the remainder of the nineteenth century by the urbanization of Honolulu. The LCA records and historic maps and archival photographs document more precisely traditional Hawaiian settlement and subsequent historic land usage within and around the present project area.

An 1884 map by Sereno Bishop (Figure 9) shows the location of the LCA parcels near the current project area. This figure is color-coded to match the description of the lands indicated in the LCA testimonies: blue for fishponds, orange for salt ponds or salt lands, and green for house lots. As can be seen, the salt lands are mainly along the coast, the fishponds are usually located *mauka* of Queen Street, and the house lots are clustered around established roads, especially Queen and King Streets. The testimonies for LCA parcels near the project area are summarized in Table 1.

3.2.1 The Māhele and Kewalo

On southeastern O‘ahu, *ahupua‘a* generally extended from the Ko‘olau mountain range on the *mauka* side to the seacoast on the *makai* side. The *ahupua‘a* was divided further into smaller land divisions called *‘ili*. However, in the Honolulu/Waikīkī area, land divisions became more complicated. Because of the early development and importance of the coastal areas, several *ahupua‘a,* such as Nu‘uanu, Pauoa, Makiki, Mānoa, and Pālolo became “cut off” from the sea. In order to retain some access to all of the resources of the land, several *‘ili* had *lele*, or jump lands, which were smaller contiguous or non-contiguous parcels in the uplands, in the river valleys, and along the coast. Kewalo was one of these *lele* lands, which were often independent of the adjacent *ahupua‘a*.

An early surveyor for the Hawaiian Government Survey office explains about *lele* in general.

> The next subject that claims attention is that of the subdivision of the ahupuaa. The subdivision of the Ahupuaa were called ili. . . . each, of course, named with its own individual title and carefully marked out as to boundary. . . .
>
> There were two features of the ili, referred to by the terms lele and ku, which are worthy of notice. . . . the ili often consisted of several distinct sections of land—one, for instance, on the seashore, another on dry, open land, or *kula*, another in the regularly terraced and watered kalo patch or *aina loi* district, and another still in the forest, thus again carrying out the equable division system which we have seen in the ahupuaa.
>
> These separate pieces were called, *lele*, i.e., “jumps,” and were most common on Oahu. . . . Punahou had anciently a lot on the beach near the Kakaako Salt Works [Kukuluāe‘o]; then the large lot with the spring and kalo patches where is now the school, and again a forest patch on the steep sides of Manoa Valley. Kewalo meanwhile had its seacoast adjoining Waikīkī, its continuous kula on the plain, and one-half of Punchbowl Hill and its kalo land in Pauoa valley.
>
> These different pieces were called variously, either by their own individual name

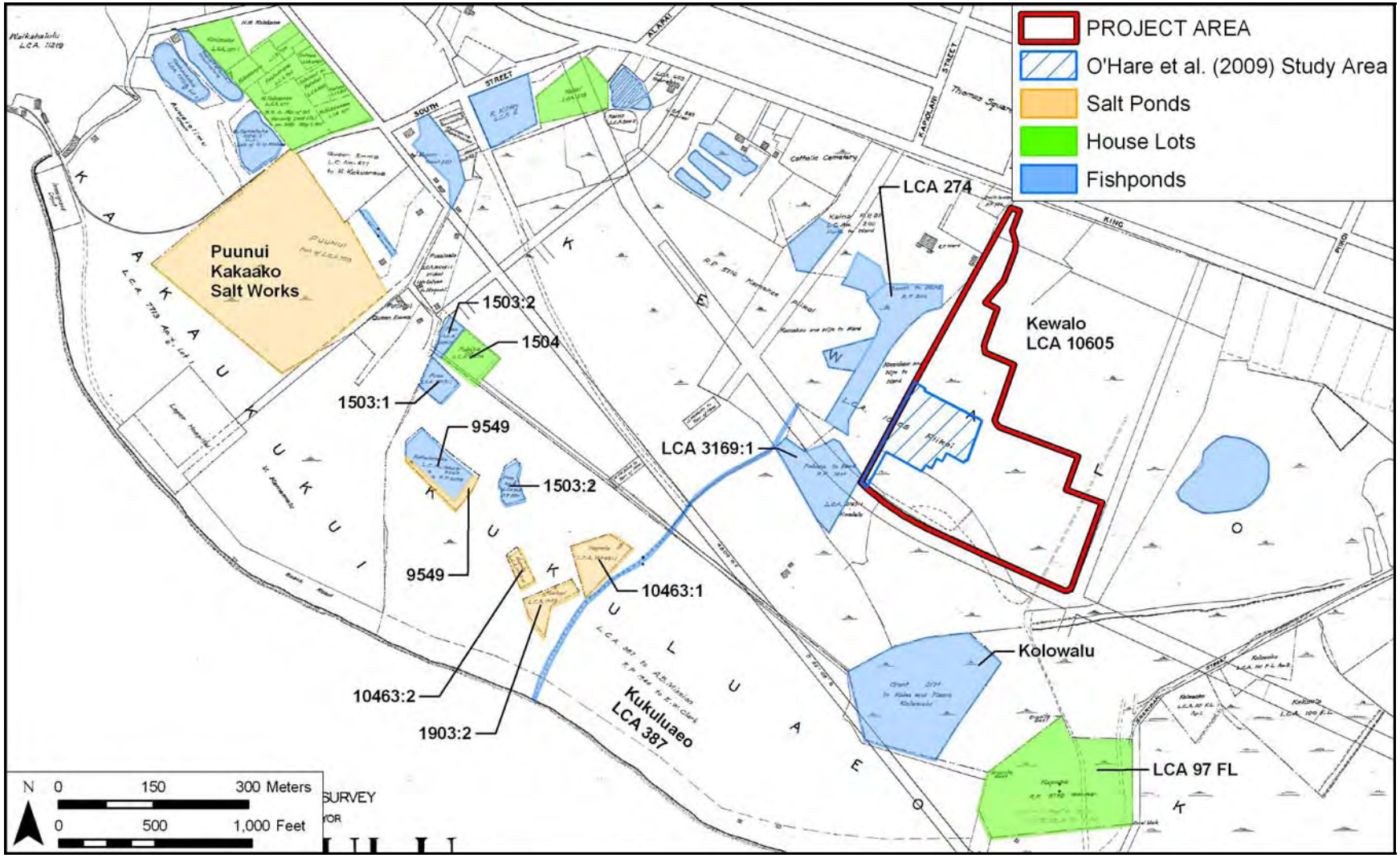

Figure 9. 1884 map of Honolulu, Kewalo Section, by S. E. Bishop, showing place names and Land Commission Award locations near the project area (Hawai‘i Land Survey Division, Registered Map No. 1090)

Table 1. Land Commission Awards In and Near the Project Area

LCA Award	*‘Ili*	Awardee	Land Use
387	Kukuluā‘eo	ABCFM	Salt lands attached to Punahou
1503:1	Kukuluā‘eo	Puaa	1 house lot and 1 fishpond
1503:2	Kukuluā‘eo	Puaa	2 fishponds
1503:3	Kukuluā‘eo	Puaa	1 fishpond
1504	Kukuluā‘eo	Pahiha (Pahika)	1 house lot, 1 fishpond, and 1 salt bed
1903:2	Kukuluā‘eo	Lolohi	2 salt beds, 15 drains, 2 *poho kai*, 1 salt *kula*
3169	Kewalo	Koalele	Taro patches and fishponds
9549	Kukuluā‘eo	Kaholomoku	3 fishponds and 4 salt pans on Waikīkī side of pond; Kaholomoku gave half of the salt collected on his land to Rev. Bingham
10463:1	Kukuluā‘eo	Napela	2 ponds, one ditch, and one house lot
10463:2	Kukuluā‘eo	Napela	Salt land
10605	Kewalo	K. Pi‘ikoi	No information
97 FL (Royal Patent 3782)	Kālia	Fort Lands	Taro ponds and three fishponds

> or by that of the whole ili, thus puzzling one sadly when attempting to obtain information with respect to them [Lyons 1894:1697].

The ‘*ili* of Kewalo was awarded to Kamake‘e Pi‘ikoi, wife of Jonah Pi‘ikoi, as part of LCA 10605, ‘*āpana* (lot) 7. Jonah Pi‘ikoi was an *ali‘i,* a retainer of Kauikeaouli, Kamehameha III, who held several government posts. The award was divided between himself and his wife (Kame‘elehiwa 1992:269). According to Pukui et al. (1974:184), Pi‘ikoi built the first two-story wooden house in this area, which was located near the future site of McKinley High School.

Kewalo had a narrow upland section (often called “Kewalo Uka”), a larger lower river valley/plain section, and a small coastal section (called “Kewalo Kai”) joined by a small strip of land. The project area is within this large LCA claim. Unfortunately, the *ali‘i*, such as Jonah Pi‘ikoi, who were granted large awards were not required to state the land use for their awards, so there is little information on the agricultural or habitation use of Pi‘ikoi’s LCA 10605. However, there is one smaller LCA award to a commoner adjacent to the southern border of the project area, LCA 3169, ‘*āpana* (lot) 1. LCA 3169, awarded to Koalele was described as:

> Mahoe, sworn, says he knows the land of Claimant in ‘Kewalo’. It consists of some kalo [taro] patches mauka and some Lokos [fishponds] makai. The kalo patches are bounded mauka by Kealoha; bound Waikīkī side by Kuaipaka’s, makai by the konohiki, ‘Ewa side by J. Booth. The fish ponds are bounded mauka by the konohiki.

> Waikīkī and makai side, the same. Honolulu side by J. Booth. Clt received his land from Kapihi in the life time of Kinau and he has held the same without dispute till the present time [Foreign Testimony 1848:507].

The taro patches were in the *mauka* lot, probably north of King Street. The lot south of the project area consisted of fish ponds. It is evident from the 1855 LaPasse map (refer to Figure 8), that there were also once fish or salt ponds in the current project area. An 1897 map (Figure 10) indicates that the swampy central Kewalo section was used to plant rice by the late nineteenth century.

3.2.2 Curtis and Victoria Ward and the "Old Plantation"

The Ward Estate once covered a large portion of the Kaka‘ako Mauka District. The area north of Queen Street was within the ‘*ili* of Kewalo and was part of LCA 272 to Joseph Booth. Joseph Booth was an early English resident of the Hawaiian Islands who operated a saloon and hotel in Honolulu, known at the time of the Māhele as the Eagle Tavern. He was granted lands in downtown Honolulu (where the tavern was located), in Kewalo Uka (Pacific Heights area), in the ‘*ili* of Kapuni, and in an area with "three fish ponds, and a part of the plain near the road leading to Waikiki." Little information on these three fishponds is given in the LCA testimony, but the Royal Patent No. 306 for these lands, mentions one known as "the large fishpond" or "long fishpond" (*loko ia nui*), which had two huts beside it. This pond would later be modified into the "lagoon" on the Ward estate, shown as a long T-shaped pond on the 1884 Bishop map (refer to Figure 9). The division between the Ward Estate in Kewalo and the Kewalo portion of the current project area (separated by a fence) is shown on an 1887 map by W. A. Wall (Figure 11).

Curtis Perry Ward, a native of Kentucky, came to the Hawaiian Islands in 1853 and soon established a livery and draying business, moving goods from the harbor to Honolulu town and loading goods at the docks for the whaling and shipping industries. In 1865, he married Victoria Robinson, who was descended from the Hawaiian *ali‘i* and early French and British residents. For his new family, Ward purchased at auction the 12-acre estate of Joseph Booth, Royal Patent 306, and additional contiguous lands in the Kō‘ula area in 1870 (Hustace 2000:21-25). This constituted the *mauka* portion of "Old Plantation" from Thomas Square on King Street to the *makai* border at Waimanu Street. A few years later (before 1875), Ward added to his property with the purchase of 77 acres and 3,000 feet of ocean frontage in the ‘*ili* of Kukuluāe‘o, *makai* of Queen Street. The Wards had a permanent easement for the ‘*auwai* (ditch) that extended from the long fishpond to the sea through the Kukuluāe‘o section. Makaloa grass, used to make mats and hats, grew along this *‘auwai* and was one source of income for the family.

Workers were hired to clear the fishponds and ditches, plant taro in the fishponds, fence in pastures for the horse, plant 6,000 coconut trees, plant *kiawe* trees for firewood, and restore the *kāhaka* (salt pans) near the shore (Hustace 2000:41).

After the death of her husband in 1882, Victoria derived much of her income from "eggs, bananas, firewood, ‘*awa*, taro leaf, *makaloa* grass, chickens, fish, hay, pigs, salt, white sand, *mānienie* grass, hides, butter, squid, and horses" collected from the estate (Hustace 2000:47). On this estate, Victoria Ward raised her seven daughters: Mary (Mrs. Ernest Hay Wodehouse);

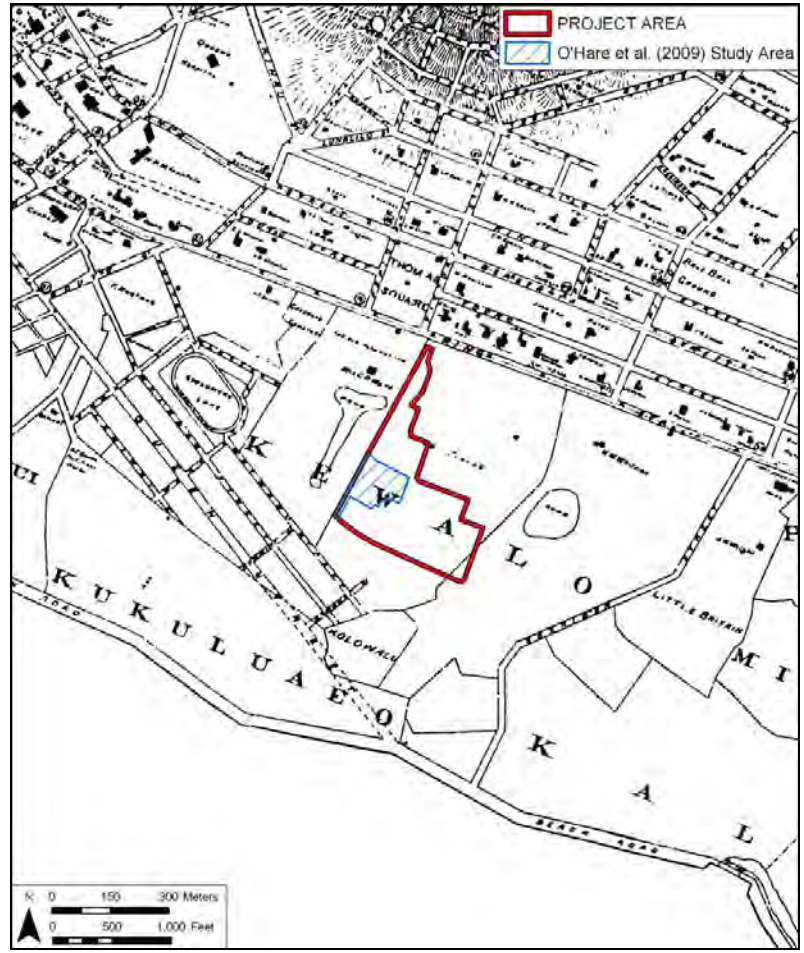

Figure 10. 1897 map of Honolulu District by M. D. Monsarrat; project area is within swamp land planted with rice (Hawai‘i Land Survey Division, Registered Map. No 1910)

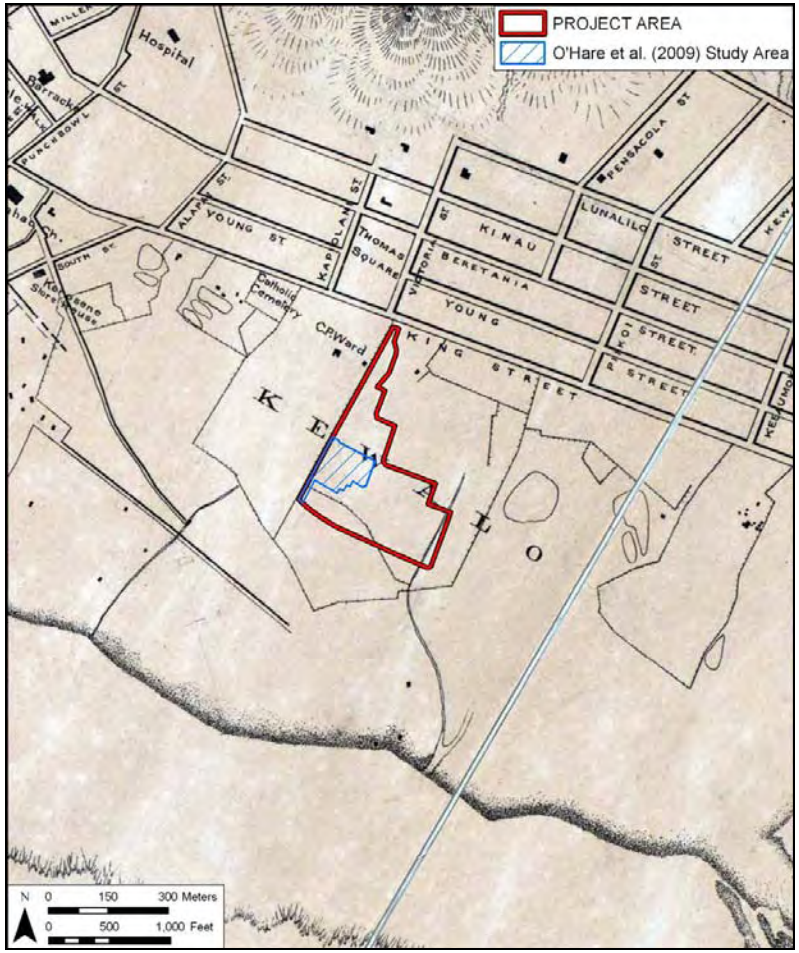

Figure 11. Portion of 1887 Honolulu and Vicinity map by W. A. Wall, showing project area in Kewalo separated from the Ward Estate by a fence (map on file at Library of Congress)

Keakealani (Mrs. Robert Booth); Annie (Mrs. Wade Armstrong); Mele Elizabeth (Mrs. Frank Hustace, Sr.); and three unmarried daughters, Kathleen, Lucy, and Kulumanu Ward. In 1930, Victoria Ward incorporated Victoria Ward, Limited to manage the estate. In 1957, the City and County of Honolulu purchased the *mauka* portion of the estate to construct the new Blaisdell Civic Center (Hustace 2000:67, 77).

A photograph taken in 1888 (Figure 12) shows the Kewalo area inland of the coast and west of the division fence on the eastern boundary of the Ward Estate. In a history on his family, Frank Ward Hustace (2000:36) identified the area on the east side of the fence as the future site of McKinley High School.

Figure 12. 1888 photograph of fence on east side of Ward Estate; the wetland in the background is the future site of McKinley High School (Catherine Isobel Hustace Collection; photograph reprinted in Hustace 2000:36)

3.2.3 Kaka‘ako Salt Works and the Salt Pans of Kewalo and Kukuluāe‘o

Much of the coastal lands in Kewalo and Kukuluāe‘o were used to produce (salt). The Hawaiians used *pa‘akai* for a variety of purposes, to flavor food, to preserve fish, for medicines, and for ceremonial purposes. David Malo describes the traditional method of salt production:

> *O ka paakai kekahi mea e pono ai, he mea e ono ai, ka ia, a me ke koekoe o ka paina ana, he mea hana ia ka paakai, ma kekahi aina, aole i hana a ma kekahi aina, o ke kai makai, e kii aku no ka wahine, a lawe mai ma ke poi, a ke kai hooholo ia mai kekahi ma kauwahi mai.*

> *E waiho kela kai ma kekahi poho paha, he ekaha paha, he kahe ka paha, a liu malaila, alaila lawe ana kauwahi e, a paakai iho la no ia, o ka papa laau ka mea kui poi* [Malo 2006:73].
>
> Translation
>
> Pa‘akai (salt) is another beneficial item. It is used to make fish delicious and tasteless foods edible. Pa‘akai is made at a particular place, [but] it [salt] is not actually made from this spot, rather it [salt water] came from the sea. A woman went to get some when the sea crashed [upon the rocks] and she ran back [the salt water] to this particular spot.
>
> That salt water (*kai*) is placed in, perhaps, a depression (*poho*) or a “Bird’s nest” (*ēkeha*) or rock basin (*kāheka*) and allowed to evaporate (*liu*). Then it is taken to another spot and is formed into *pa‘akai* [Malo 2006:95].

Captain Cook was the first to note the method of making salt in prepared “saltpans:”

> Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their saltpans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation. . . . Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons, in the Resolution only [Cook 1784:151].

In an article on Hawaiian salt works, Thomas Thrum discusses the large salt works at Ālia Pa‘akai (Salt Lake in Moanalua) and at Pu‘uloa on the western loch of Pearl Harbor. Kamakau (1961:409) reported “The king and Isaac of Pu‘uloa are getting rich by running the salt water into patches and trading salt with other islands.” The salt was sent to Russian settlements in the Pacific Northwest, where it was used to pack salmon (*Hawaiian Gazette,* January 29, 1897).

Thrum also mentions a salt works in Kaka‘ako:

> Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E. O. Hall, and subsequently E. O. Hall & Son, until comparatively recent years. This enterprise was carried on very much after the ancient method of earth saltpans as described by Cook and Ellis [Thrum 1924:116].

The export of salt declined in the late nineteenth century. Thrum (1924:116) states that the apex of the trade was in 1870, but by 1883, he noted that “pulu, salt and oil have disappeared entirely” from the list of yearly exports (Thrum 1884:68). By 1916, only one salt works, the Honolulu Salt Co., was still in operation. Salt continued to be manufactured for local use; the Kaka‘ako Salt Works appears on maps as late as 1891, and a page in Victoria Wards’ ledger for 1883 notes a yearly income of $651.50 received from her “Salt Lands” in Kukuluāe‘o (Hustace 2000:50).

3.3 Early Twentieth Century Land Reclamation Projects

3.3.1 Kaka‘ako Reclamation

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea to use this dredged material, composed of sand and crushed coral, to fill in low-lying lands was quickly adopted. Between 1857 and 1870, the “Esplanade” between Fort and Alakea Streets was created on 22 acres of filled-in former reef and tideland. By 1874, Sand (Quarantine) Island, site of the first immigration station, had been created over “reclaimed” land on reefs.

By the 1880s, filling-in of the mud flats, marshes, and salt ponds in the Kaka‘ako and Kewalo areas had begun. This filling-in was pushed by three separate but overlapping improvement justifications. The first directive or justification was for the construction of new roads and the improvement of older roads by raising the grade so the improvements would not be washed away by flooding during heavy rains.

Although public health and safety were prominently cited according to Nakamura (1979:113), the main desire (and third justification) to fill in Honolulu, Kewalo, and then Waikīkī lands was to provide more room for residential subdivisions, industrial areas, and finally tourist resorts. In the early part of the twentieth century, Kaka‘ako was becoming a prime spot for large industrial complexes, such as iron works, lumber yards, and draying companies, which needed large spaces for their stables, feed lots, and wagon sheds.

In 1904, the area around South Street from King to Queen Streets was filled in. The Hawaii Department of Public Works (1904:117) reported that “considerable filling [was] required” for the extension of Queen Street, from South Street to Ward Avenue, which would “greatly relieve the district of Kewalo in the wet season.”

3.3.2 Kewalo Reclamation Project

Although the Board of Health could condemn a property and the Department of Public Works could then fill in the land, the process was rather arbitrary and piecemeal. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo, consisting of 140 land parcels (including areas once known as Kukuluāe‘o and Ka‘ākaukukui), which had numerous ponds (Hawai‘i Department of Public Works 1914:196).

In 1914, the entire:

> . . . locality bounded by King street, Ward avenue, Ala Moana and South street, comprising a total area of about two hundred acres, had been found by the board of health of the Territory to be deleterious to the public health in consequence of being low and below ‘the established grades of the street nearest thereto’ and at times covered or partly covered by water and improperly drained and incapable by reasonable expenditure of effectual drainage, and that said lands were in an insanitary and dangerous condition [Hawaii Reports 1915:329].

The first land to be filled in was the portion of the Ward Estate Kukuluāe‘o property west of Ward Avenue; it was completely filled in by June of 1913. By August, the rest of the Ward Kukuluāe‘o lands west of Ward Avenue had been completely filled, and by February 1914, all of

the land from South to Ward Streets, and from Ala Moana Boulevard to Queen Street had been filled.

The expense of the suit did manage to shut down operations planned for the area from Ward Street to Waikīkī (Thrum 1916:159-160), an area that includes the present project area. This land was mainly owned by the Bishop Estate, who leased the land to small farmers growing taro and rice and raising ducks in the ponds. In 1916, the Bishop Estate announced that as soon as their present tenant leases expired they planned to fill the lands and divide them into residence and business lots (Larrison 1917:148-149). In 1919, a portion of the coastal section of the Bishop Estate lands was secured by the government in order to expand the Kewalo Basin (Thrum 1920:148).

3.3.3 Kewalo Basin Dredging

In 1919, the Hawai‘i Government appropriated $130,000 to improve the small harbor of Kewalo for the aim of “harbor extension, in that it will be made to serve the fishing and other small craft, to the relief of Honolulu harbor proper” (Thrum 1920:147). As the area chosen for the harbor was adjacent to several lumber yards, such as the Lewers & Cooke yards, the basin was initially made to provide docking for lumber schooners, but by the time the wharf was completed in 1926, this import business had faded, so the harbor was used mainly by commercial fishermen. The dredged material from the basin was used to fill a portion of the Bishop Estate on the western edge of Waikīkī (possibly including the current project area) and some of the Ward Estate in the coastal area east of Ward Avenue (U.S. Department of the Interior 1920:52). In 1941, the basin was dredged and expanded to its current 55 acres. In 1955, dredged material was placed along the *makai* side to form an 8-acre land section protected by a revetment.

3.3.4 Waikīkī Reclamation Project

It was during the 1920s that southeast O’ahu would be transformed when the construction of the Ala Wai Drainage Canal—begun in 1921 and completed eight years later—resulted in the draining and filling in of the remaining ponds and irrigated fields of Honolulu and Waikīkī. The canal was one element of a plan to urbanize Waikīkī and the surrounding districts, first conceived of in 1906. Dredging for the Ala Wai Canal began in 1921 and was completed seven years later. The final result was a “canal three miles long, with an average depth of twenty-five feet and a breadth of two hundred fifty feet” (*Honolulu Advertiser*, 17 October 1928:2:16).

The first action was to dig a canal parallel to the coast along Waikīkī Beach. The dredged material was placed on adjacent properties from McCully Street to Kapi‘olani Park. This action affected several private landowners, including the Bishop Estate and the Booth Estate. The second action was to dredge a canal from the beach towards the reef. The material dredged was pumped to the new McKinley High School site, an area of former large ponds adjacent to the eastern boundary of the *mauka* portion of the Ward Estate (Hawaii Governor 1922:49-50). Additional dredged material was used to fill the area *makai* of the school grounds in 1930 (Hawaii Governor 1930:74).

Hawaiian Dredging Company registered their title to the Kolowalu parcel in 1929. This company, founded in 1902 by Walter Dillingham, president of the Oahu Land and Railway Company, had won the initial bid for dredging associated with the construction of the Ala Wai Canal (Thrum 1923:66). Hawaiian Dredging may have obtained title to the land in 1929 so that

they did not have to obtain permission from the owner to fill the ponds. The current project area was probably filled during this time period. Besides hydraulic pumped fill provided by Hawaiian Dredging Company, the area may have also been used as an area to dump domestic trash.

3.3.5 Urban Development

The 1884 Bishop map (refer to Figure 9) shows the nascent traces of the future development in the grid of roads stretching inland from the coast in the late nineteenth century. Kaka‘ako and Kewalo were considered outside the Honolulu town boundary and were used in the mid to late nineteenth century as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. Then in the beginning of the twentieth century, the area was used as a place for sewage treatment and garbage burning, finally becoming an area for cheap housing and commercial industries (Griffin et al. 1987:13).

During the first half of the twentieth century, both rice fields and marshlands would be eliminated, as Kaka‘ako and Kewalo lands were filled to accommodate the expanding urbanization of Honolulu. The 1887 map surveyed by W. A. Wall (refer to Figure 11) shows a corridor of streets extending diagonally from Honolulu Town, including Queen Street, which was planned to connect to the beach road to Waikīkī. The Queen Street alignment appears to follow the route of the traditional trail from Honolulu to Waikīkī, described by John Papa ‘Ī‘ī. This trail likely ran on a sand berm raised above the surrounding marshlands and coral flats. The location of the northern Kaka‘ako boundary adjacent to the trail/Queen Street corridor suggests that at least the *makai* portion likely comprised a sandy dryland environment in the traditional Hawaiian landscape.

A 1919 U.S. War Department map (Figure 13) shows residences clustered around Queen Street and Ward Avenue. There were still many ponds east of the Kaka‘ako District, especially at the future site of McKinley High School, and the area east along the coast, which would be developed into the Ala Moana Shopping Center and Park. The map indicates that the project area was within a swamp, probably still used for rice cultivation. There is a trail along the eastern boundary of the project area that aligns with the *makai* end of Victoria Street, which connects the residential areas around King Street to the residential areas along Queen Street.

A 1927-28 U.S. Geological Survey map (Figure 14) shows the first buildings of the new McKinley High School campus and also illustrates that the eastern portion of the Kaka‘ako District is still undeveloped, with dotted lines showing unimproved or proposed streets. However, the land was inhabited more than is evident from this map. The Ward family leased to the Japanese lands for camps, schools, playgrounds, temples, and shrines. Kaka‘ako was one of the first residential areas for working class families, housing people working at the laundries, the harbor, the Honolulu Iron Works, the Honolulu Brewery, and truck drivers, seamen, and fishermen. In 1940, Kaka‘ako had a population of over 5,000 residents. Hawaiians, Portuguese, Chinese, and Japanese settled in camps based on their ethnic origins, but they came together for social and community functions.

After World War II, the Kaka‘ako area became increasingly industrialized, and residents moved out to the newer subdivisions away from the Honolulu central area. A 1943 U.S. War Department map (Figure 15) is the first to show the newly developed Kewalo Basin. The Kewalo

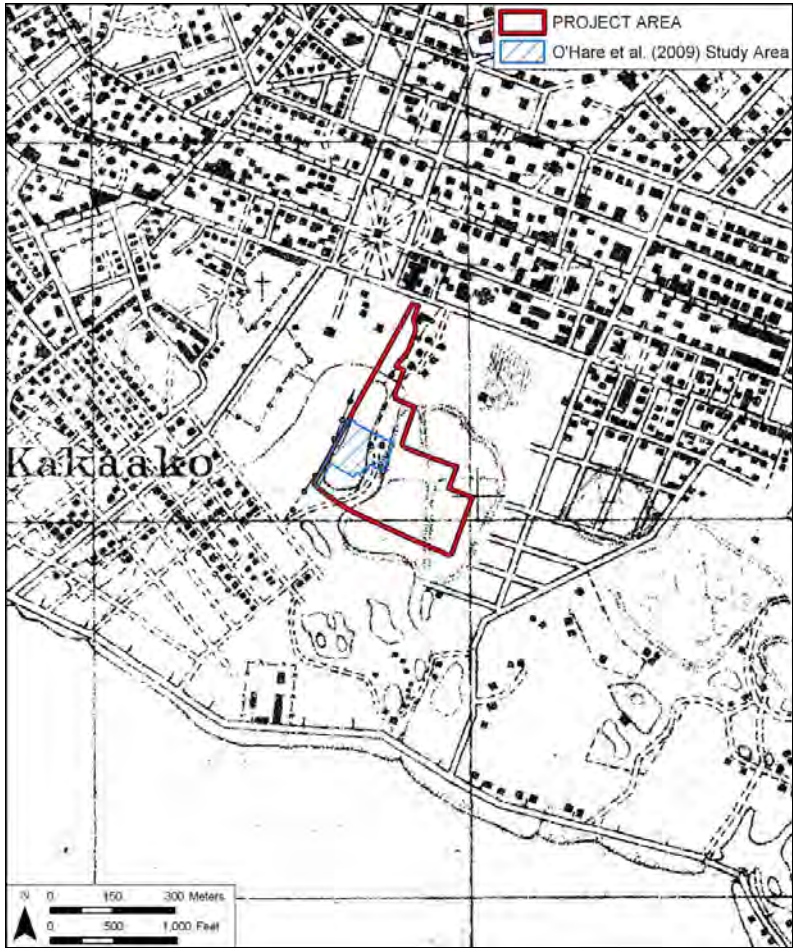

Figure 13. 1919 U.S. War Department fire control map of O‘ahu, Honolulu Quadrangle; the current project area is within and surrounded by ponds

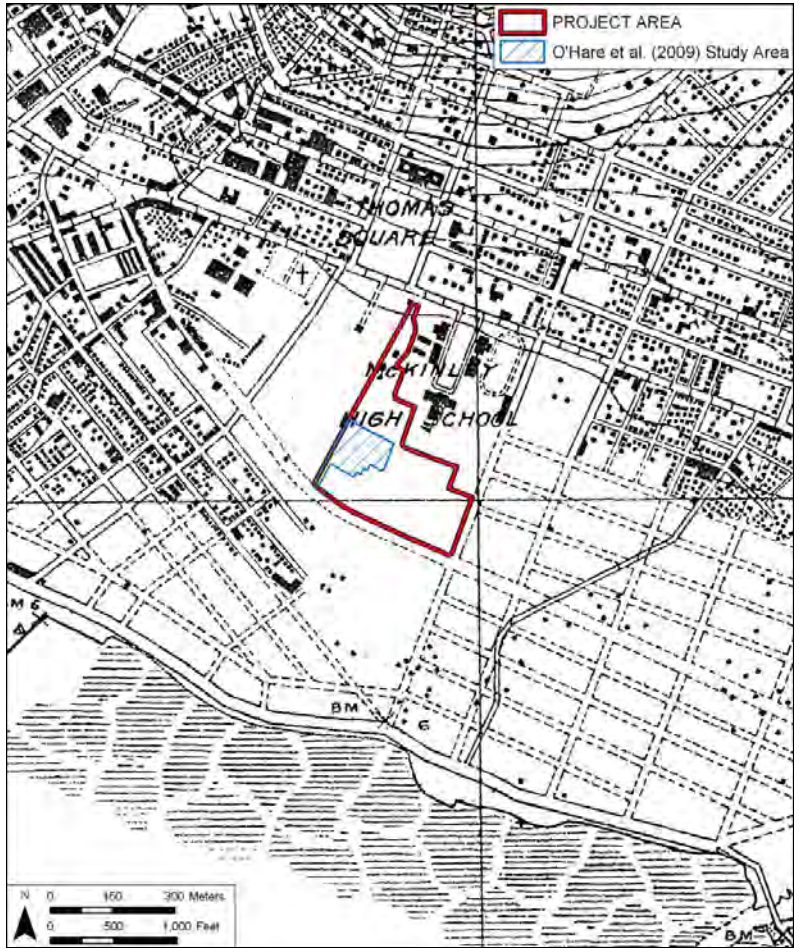

Figure 14. Portion of 1927-28 U.S. Geological Survey map, Honolulu quadrangle, with current project area south and west of the newly constructed McKinley High School

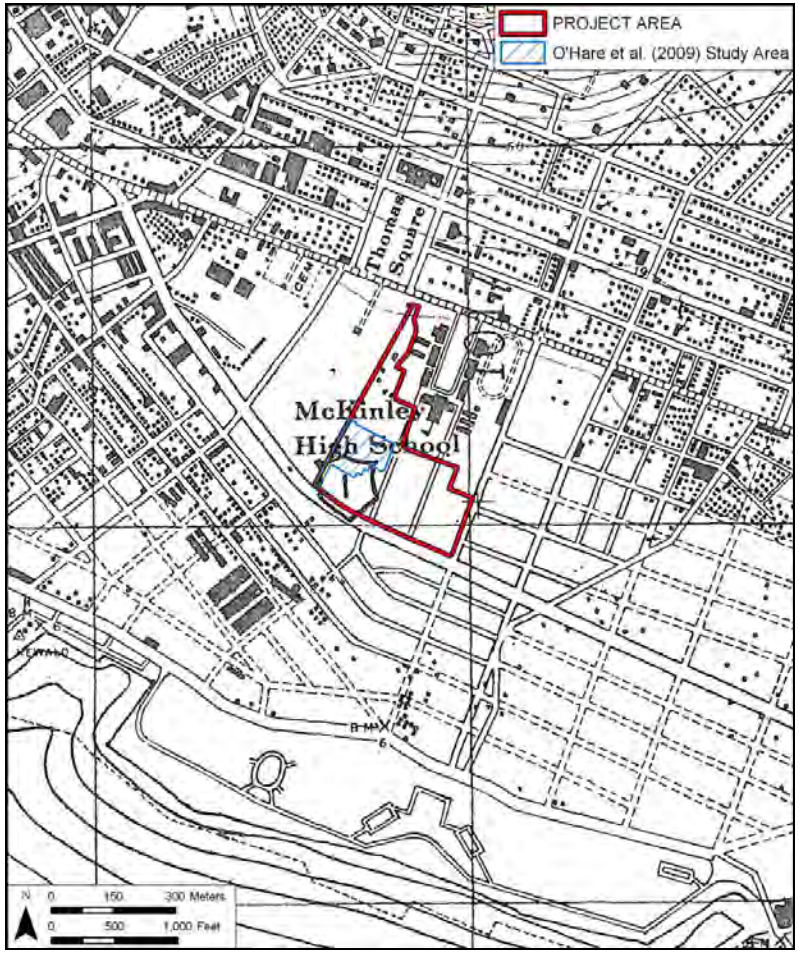

Figure 15. Portion of 1943 U.S. War Department map, Honolulu quadrangle, with addition of access roads within the McKinley High School campus

Channel had been dredged in 1924 and the McFarlane Tuna Company (now Hawaiian Tuna Packers) built a shipyard there in 1929 for their fishermen’s “sampan fleet.”

A 1956 U.S. Army map of O‘ahu (Figure 16) illustrates the continued construction of buildings and fields at McKinley High School, including an athletic field within the current project area.

3.3.6 History of McKinley High School

McKinley High School has a long and important history for the development of education in Honolulu. In 1832, land on Bethel Street near Honolulu Harbor was secured to build a new church, one primarily devoted to services for the numerous visiting seamen who stopped at Honolulu for supplies and rest during long trading voyages or on whale hunts. This new church was called the Bethel Chapel or the Seamen’s Chapel (Dabagh and Case 1988:9). In 1848, several foreigners connected with trading voyages had settled around Honolulu and attended the Bethel Chapel. They decided to establish a separate church for resident traders and businessmen. Bethel Chapel became known as the First Foreign Church (although it also retained its original names) and the new church was called the Second Foreign Church. The members built their new church at the corner of Fort and Beretania Streets, and it quickly became known as the Fort Street Church. In 1887, the Bethel Chapel and the Fort Street Church united to become the Central Union Church (Dabagh and Case 1988:21, 35).

The churches were established for church services and missionary work, but they were also important in the establishment of early educational endeavors. In 1865, the Fort Street English Day School was established at the Fort Street Church as a private school. Several of the original students were from the closed Oahu Charity School, which had been built in 1832. The school moved to a new building at Fort and School Streets in 1869 and was taken over by the Board of Education, becoming a select school (a public school with some tuition; Alexander 1909:35-36). In 1895, the younger Fort Street students were moved to Ka‘iulani School and the older students were moved to the former home of Princess Ruth Luka Ke‘elikōlani in Kapālama, built for her in 1878. The new school for the older students was renamed the Honolulu High School, which was only one of four public high schools in the Hawaiian Islands at the time. The other three high schools were at Hilo on Hawai‘i, Hāmākuapoko on Maui, and Līhu‘e on Kaua‘i.

The school moved again in 1907 when a new campus for the Honolulu High School was built on the corner of Beretania and Victoria Streets, two blocks north of its present location (Figure 17). The new school was named the President William McKinley High School for the president who was in office and who was in favor of annexation of Hawai‘i as a territory into the United States. McKinley was the only public high school in Honolulu until the construction of Farrington High School in 1936. McKinley High School was especially important for the first and second generation descendants of sugar plantation immigrant workers, and more than half of the student population was composed of students of Japanese descent in the 1930s (Odo 2004:76).

Due to the increase in students, a new site was acquired in 1921, and the school moved in 1923 to its present location between King Street and Kapi‘olani Boulevard, west and adjacent to Pensacola Street. Besides the original four academic buildings, new structures were built over the years: the Scott Auditorium in 1927, the Wright Swimming Pool in 1926, the Tsukiyama

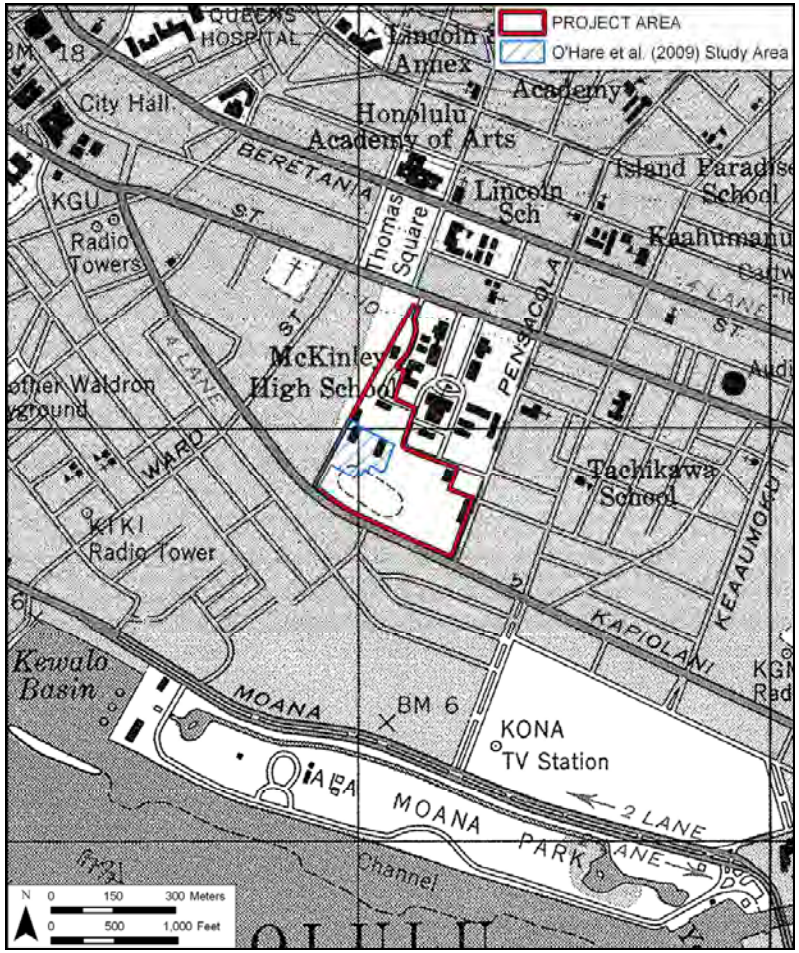

Figure 16. Portion of 1956 U.S. Army Mapping Service map of O‘ahu, Honolulu quadrangle, showing development of improved roads in the Kaka‘ako District and additions to McKinley High School, including a new athletic field within the current project area

Figure 17. 1915-1921 photograph of McKinley High School on Beretania and Victoria Streets (Mr. and Mrs. Uldrick Thompson Photograph Album, Kamehameha Schools)

Social Studies building in 1959, the Carey Cafeteria building in 1961, the Music building in 1962, the Student Council Gymnasium in 1964, and the Wise Football Field in 1965. Many of the buildings were designed by noted architect Louis E. Davis, who designed the main buildings in the Spanish Colonial Revival style (President William McKinley High School 2009; Figure 18).

McKinley High School has many notable alumni, including Governor George Ariyoshi, U.S. Senator Daniel Inouye, sculptor Satoru Abe, Olympic swimming champion Duke Kahanamoku, and actor Dwayne “The Rock” Johnson (Public School Review 2009).

A series of Sanborn Fire Insurance Maps (Figure 19 through Figure 22) shows the evolution of the campus between 1914 and 1956. Fire insurance maps only illustrated areas of Honolulu with permanent or semi-permanent structures; therefore, the southern portion of the campus, on which the current project area is located, is not shown on these maps. This section of the campus was open and used for athletic events. The 1956 O‘ahu map (refer to Figure 16), shows that by 1956 there were several buildings and an athletic field in the southern section, the portion near Kapi‘olani Boulevard.

Early photographs also show the changes in the campus. One photograph (Figure 23), probably taken in the early 1920s before the high school was built in 1923, shows the extensive fishponds of the area east of the tree-covered Ward Estate. In a 1927 photograph (Figure 24), classrooms had been built on the northern section of the campus, but the southern section still had partitioned rice fields, although probably abandoned by that time. A 1938 photograph shows that by this time, these fields had been filled in and covered with a layer of coral (shown as white patches in the photograph), and an oval athletic field was laid out perpendicular to Kapi‘olani

Boulevard in the southern section of the campus (Figure 25). In a 1949 photograph (Figure 26), the athletic field is in the southwestern corner, parallel to Kapi‘olani Boulevard.

Figure 18. McKinley High School; note statue of President William McKinley in front (Joel Bradshaw 2009)

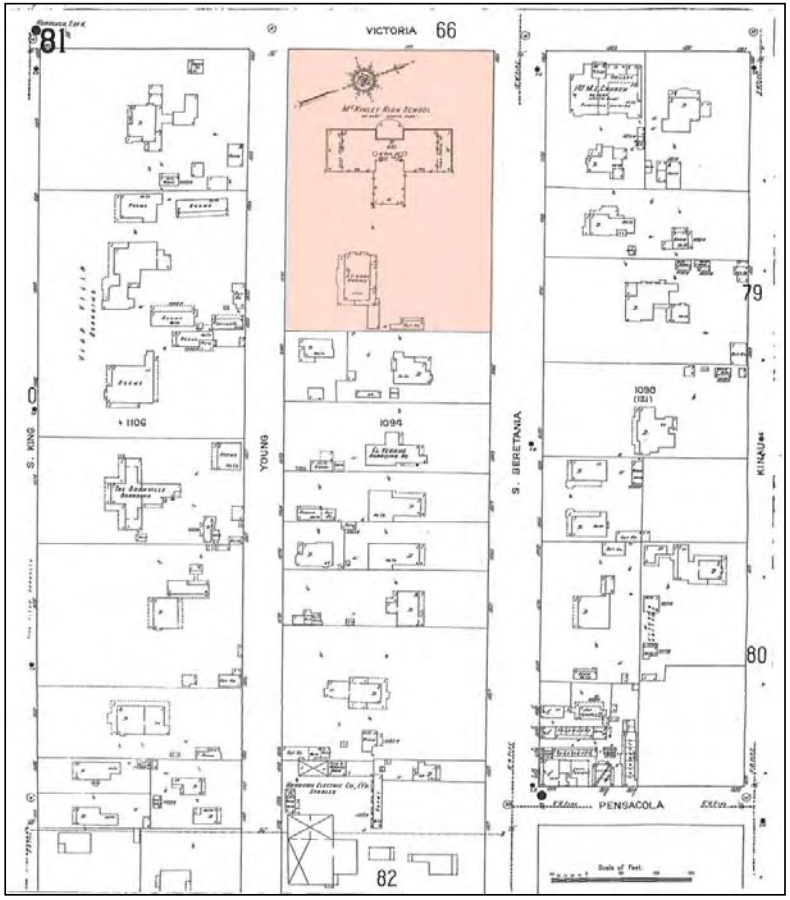

Figure 19. 1914 Sanborn Fire Insurance Map showing McKinley High School on Beretania Street between Victoria and Pensacola Streets, two blocks north of its present location

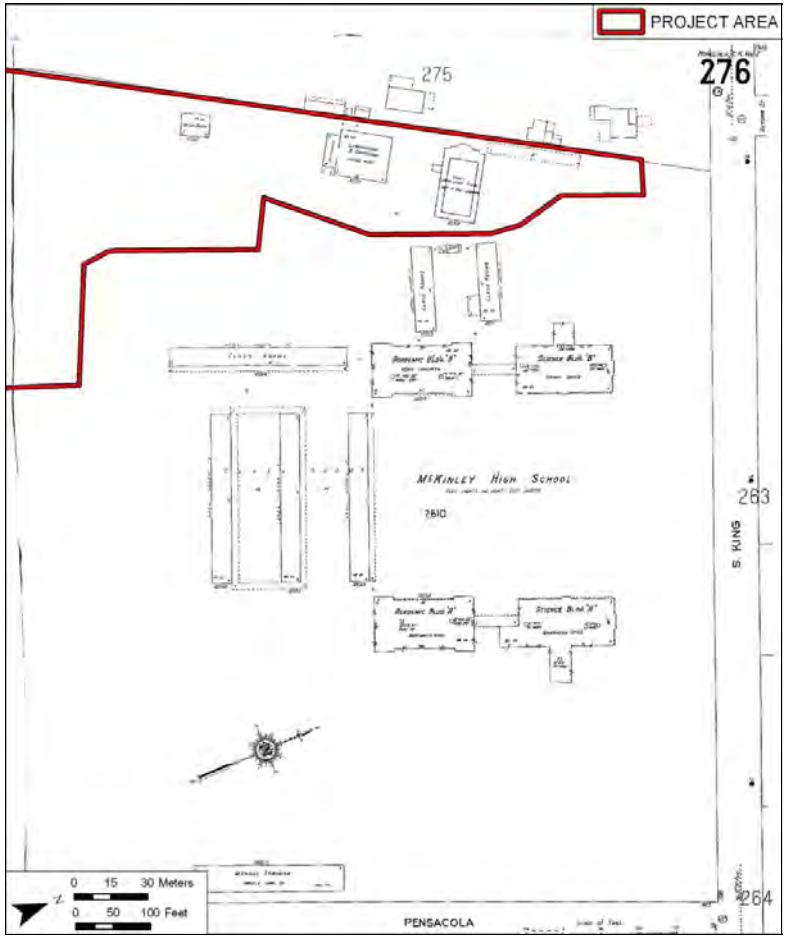

Figure 20. 1927 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of project area not shown

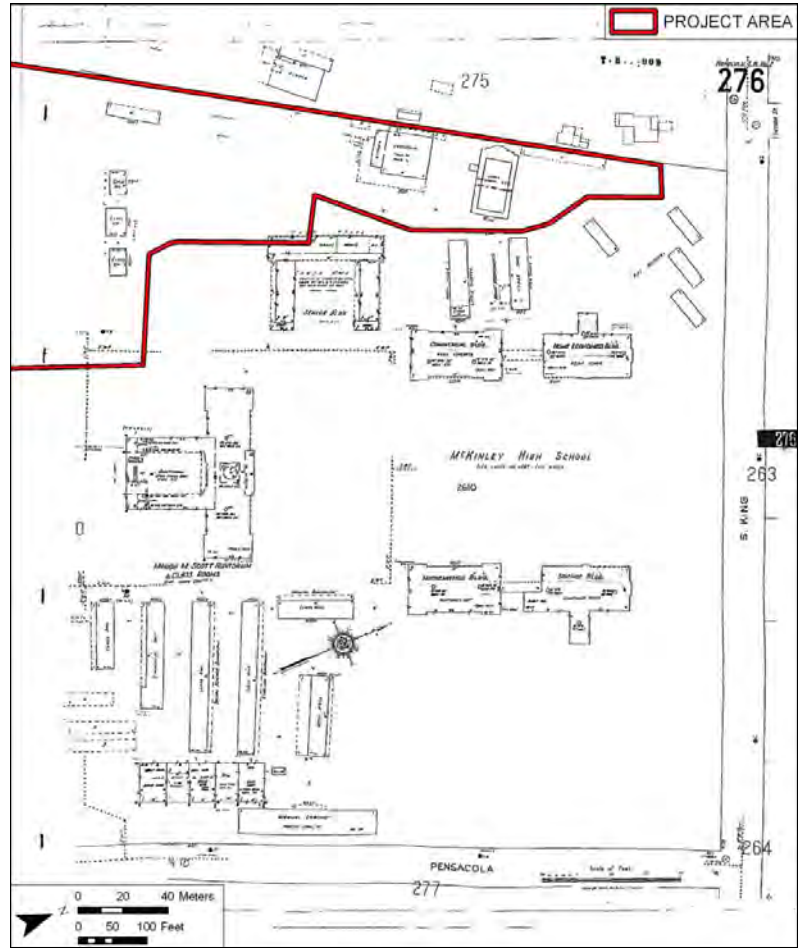

Figure 21. 1950 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of project area not shown

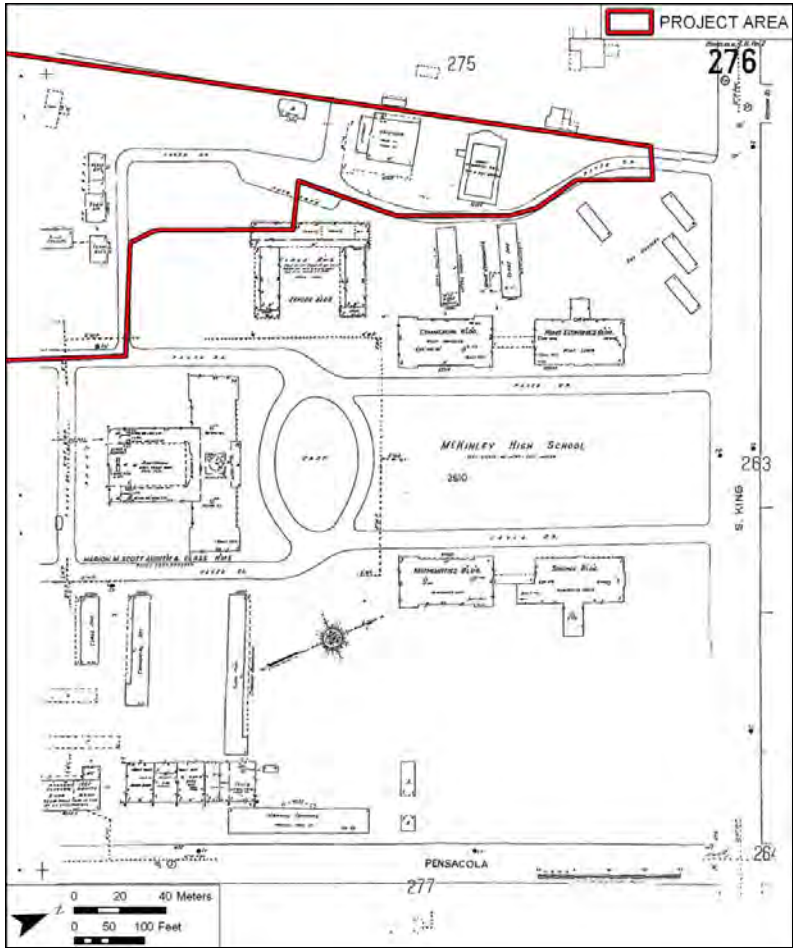

Figure 22. 1956 Sanborn Fire Insurance Map showing the McKinley High School campus between King and Pensacola Streets; southern section of campus and most of project area not shown

Figure 23. Pre-1923 photograph of Kewalo ponds, the future site of McKinley High School; the Ward Estate (*kiawe* and coconut grove) is to the west (right side of photograph; Hawai‘i State Archives)

Figure 24. 1927 Aerial photograph of the McKinley High School campus; note old partitioned rice fields in the southwestern (lower left) corner within the current project area (Hawai‘i Coastal Geology Group)

Figure 25. 1938 photograph of McKinley High School campus with athletic field in southwest (upper left) corner, perpendicular to Kapi‘olani Boulevard (U.S. Army Museum-Hawai‘i)

Figure 26. 1949 aerial photograph of McKinley High School campus with athletic field in southwestern corner, parallel to Kapi‘olani Boulevard (Hawai‘i State Archives)

Section 4 Previous Geological and Archaeological Research

4.1 Geological Study of Kewalo and Kaka‘ako

For his doctoral dissertation in geology and geophysics, Charles C. Ferrall (1976) synthesized all data from subsurface boring logs excavated in the Honolulu and Waikīkī areas up until that time. The data was compiled from 800 borings made by the Hawai‘i Public Works, Board of Water Supply and other state and city engineering departments.

Most of the coastal plain of Honolulu formed during the Pleistocene, during several sea level fluctuations related to the advance and retreat of glaciers. These fluctuations produced reef deposits at various levels, some above the present sea level. The Kaka‘ako area coral shelf was mainly formed during the Waimanalo High Sea Stand, approximately 120,000 years ago, which reached a maximum of 25 ft above the present sea level. The Waimanalo High Sea Stand was preceded by the Waipio Low and was followed by the Mamala Low. During the Mamala Low when the sea receded as much as 300 ft below present levels, deep alluvial channels dissected the former reefs, including one which Ferrall calls the HIC Channel (Figure 25). This channel was found in borings made within the Honolulu International Center (now called the Blaisdell Center), thus the name of the channel.

For bores excavated in the Kaka‘ako area, the coral shelf was found at three different levels, at 5 ft above sea level and at 15 and 30 ft below sea level. The +5, -15, and -30 coral ledges were all formed during the Waimanalo High Sea Stand. Ferrall (1976:116) notes that extensive coral “growth occurred during the Waimanalo High Sea Stand, probably as a result of the warmer climate of the interglacial stage”. As the sea receded from a previous high of +25 ft, it paused at +5 ft, long enough for the growth of corals that favor a high-energy, flat, reef environment. This reef was developed in about 20 ft of water. The -15 ft ledge probably developed after this during a regression of the sea from the Waimanalo High Stand to the Mamala Low Stand. The -15 ft coral shelf also developed within a high-energy zone, but was formed in a more shallow water environment, in only a few feet of water. The -30 ft coral shelf was composed of coral that grows in low-energy lagoonal environments. It may represent the “seaward (forereef) reflection” of one of the +5 or -15 coral ledges rather than a separate time period (Ferrall 1976:125).

Ferrall (1976:135) remarks on the area with the -5, -15, and -30 coral ledges:

> . . . lagoonal deposits are widespread . . . overlying the -30 and -15 ledges, the alluvial channels, and the lower, seaward edge of the +5 ledge. In general, any area that was not above existing sea level prior to the [Mamala] transgression to the modern sea level became covered with lagoonal deposits. . . . After the sea more or less stabilized at its present level, the lagoon filled up and became a swamp. Swamp deposits, with peat layers, are found from just below existing sea level, on top of the lagoonal deposits, to just above sea level. Even into historical time, much of the area seaward of the +5 ledge was dominated by swamp conditions.

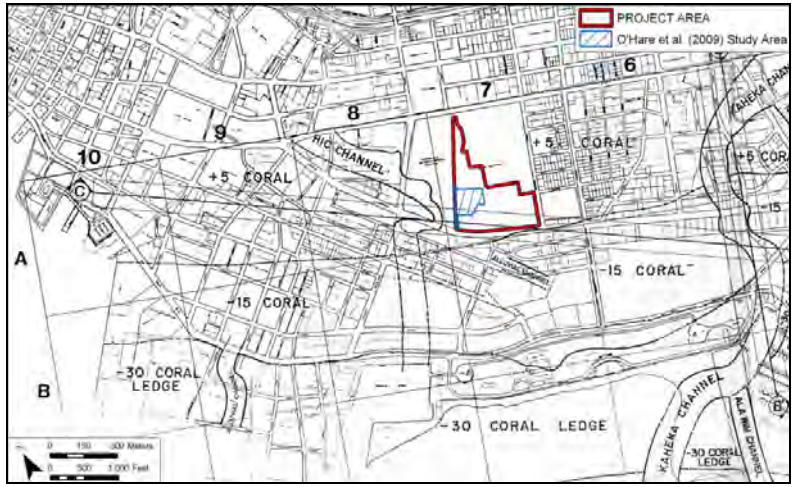

Figure 27. Coral shelf depth (+/- feet above or below sea level) and possible location of HIC channel (modified figure of outsize map in Ferrall 1976)

In discussing the various areas of Kaka‘ako, Ferrall divided his area into Quads (refer to Figure 27). The current project area falls within Quad A-7. According to Ferrall’s work, the current project area is within the +5 coral ledge zone, *mauka* of the -15 and -30 coral ledges.

In Quad A-7, the coral ledge is 5 ft (+5) above sea level. Numerous borings were made within this Quad. Nineteen borings were made along the western edge of the Quad. The coral ledge in this area ranges from -4 to -8 ft below sea level, with the coral extending to at least -25 ft. Lagoonal (swamp) deposits overlay the coral up to +3 ft. Alluvium then occurs from +5 to +3 ft. Five borings were made at the northeast corner of McKinley High School. The coral ledge here is at approximately +2 ft. The coral in this area extends to -22 ft and is overlain with fill/alluvium and sand up to +8 ft. Four borings were made to the east of McKinley High School. These borings encountered the coral ledge at -4 ft. The ledge is overlain with 5 ft of lagoonal deposits and 5 ft of fill/alluvium. In the southeast corner of Quad A-7, 11 borings show that the coral ledge ranges from -5 to -12 ft below sea level. This area is thought to be the eroded surface of the +5 coral ledge. The coral is overlain with lagoonal deposits, cinder sand, and then fill/alluvium (Ferrall 1976:49-50).

4.2 Archaeological Background

Most traditional Hawaiian surface structures had been demolished in the Kaka‘ako area by the time of the first scientific archaeological surveys (e.g., Griffin 1987). McAllister (1933:80), in his report on the survey of O‘ahu sites conducted in the early 1930s, says of Honolulu

“Information regarding former sites within the present limits of Honolulu must come entirely from literary sources.” He does mention Pākākā Heiau, once the main royal temple in Honolulu; this *heiau* would have been located around the foot (*makai* end) of Fort Street. He does not list Pu‘ukea Heiau (discussed in Section 2.3.3), which Kamakau (1991:24-25) placed in Kukuluāe‘o, but he does note that Peter Corney (1896:101), a visitor to the island in 1819, saw several *heiau* (*morai*) along the Honolulu shore.

Archaeological investigations have been conducted in parcels adjacent to the project area and on road alignments near the present project area; the findings are summarized in Table 2, and the locations are illustrated in Figure 28.

Table 2. Previous Archaeological Work Within and Adjacent to the Current Project Area

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
Smith 1989	Kapi‘olani Blvd.	Inadvertent discovery of 1 human burial
Anderson 1995, 1997a and b	King Street and Archer Lane	Inventory survey, monitoring, and burial disinterment; minimum of 30 historic burials from the Roman Catholic Church Cemetery (Site **-5455**), one burial disinterred; some historic refuse pits (Site **-5373**) recorded along western side of the cemetery.
Allen 1997	Symphony Park, Ward Ave.	Paleo-environmental investigations identified a wetland (four wetland strata, Layers II-V) below a modern fill layer (Layer I). The lowest layers represented the changes that occurred as the local area changed from a marine bay to a lagoon and eventually to a marsh.
Winieski & Hammatt 2000a	Kaka‘ako ID-3 and other parcels	Old "A" horizon noted throughout project area; 20 human burials recorded, 17 of which were recovered (Sites **-4380** and **-5820**).
Winieski & Hammatt 2000b	Kaka‘ako ID-4, Kamake‘e St.	Two adjacent coffin burials recorded (Site **-4498**); old "A" horizon noted in trenches from Queen to Waimanu St.
Souza et al. 2002	Kaka‘ako ID-7, Kamake‘e St.	Three disturbed pre-contact burials recorded (Sites **-6376, -6377, -6378**); old "A" horizon found in 7 of 10 profiles.
O‘Hare et al. 2003	Block on corner of Kapi‘olani Blvd. and Pi‘ikoi St.	24 trenches excavated in a lot on the east side of Pi‘ikoi St. Two sites identified: several historical trash pits (Site **-6637**) with material dating to the 1920s to 1940s and a wetland stratum with a defined sand berm (Site **-6636**), which can be seen on late nineteenth century maps.

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
Tulchin and Hammatt 2004	Kapi‘olani Area Revised Sewer System project (9 subareas)	Literature review indicated a high probability for encountering human skeletal remains in the lot. No surface archaeological or historical features were observed during the field check.
O’Hare et al. 2004 Tulchin & Hammatt 2005	Ko‘olani Condominium	Original wetland surface of Kewalo (Site **-6636**) and 3 historic trash pits (Sites **-6639, -6641**) reported during inventory survey; wetland sediments (Site **-6636**) and historic deposits (Site **-6641**) noted in addendum report.
O‘Leary & Hammatt 2004	Unit 9 Streets	No cultural remains found during monitoring.
LeSuer and Cleghorn 2004	East O‘ahu Transmission Project; King St.	Archaeological assessment; no fieldwork.
Clark & Gosser 2005; Gosser et al. 2006	Kamake‘e St. and Kapi‘olani Blvd.	Subsurface archaeological inventory survey and monitoring. No finds during AIS other than a previously described wetland area (Site **-6636**). Buried “A” horizon found during monitoring.
Monahan 2005	Kapi‘olani Blvd. *makai* of the Blaisdell Ctr.	Archaeological assessment report of three parcels measuring 1.35 acres in Kewalo. No surface features were found.
Esh & Hammatt 2006	Pi‘ikoi St. from Ala Moana Blvd. to Matlock St.	Monitoring of Unit 5B Streets; no cultural materials found.
Hammatt 2006a	Kapi‘olani Blvd.	Field inspection; no surface historic properties were observed.
Hammatt 2006b	Ala Moana Center	Archaeological inventory survey; one feature, a wooden box containing historic artifacts (Site **-6847**)
Perzinski et al. 2006	Kewalo HECO Dispatch Center	6 trenches and 9 pile caps excavated; 2 human burials recorded (Site **-5455**).
Bell et al. 2006; Thurman et al. 2007	Victoria Ward Village Shops	Six burials (Site **-6854**) found during an inventory survey and an additional 50+ burials found during an on-going monitoring project. Historic privy/activity area (Site **-6855**) and fishpond sediments (Kolowalu Pond; Site **-6856**) recorded.
Bush & Hammatt 2006	Auahi Street	No archaeological finds were made during monitoring for electrical trenching.
O'Hare et al. 2006	Kaka‘ako ID 10	Cluster of 28 historic burials (Site **-6658**), 2 isolated disturbed burials (Site **-6659**), and a historic trash dump (Site **-6660**) recorded; weak "A" horizon noted; some fishpond sediments.

Authors	Project Name/Location	Results (Sites 50-80-14-xxxx)
O’Leary & Hammatt 2006	Moana Vista, Kapi‘olani Blvd.	Inventory survey; no findings.
Barnes & Shideler 2007	Kona & Waimanu Sts.	No surface features found during a field inspection. Background research indicated the possibility of subsurface burials.
O’Hare et al. 2007	Alapai Transit Center	28 trenches excavated; 4 trash pits (Site **-6901**) and 3 burials (Site **-6902**) discovered.
Hammatt 2008	Ko‘olani Condominium	Two isolated burials (Sites **-6910, -6912**) and a cluster of 16 coffin burials (Site **-6911**) found during monitoring project.
Thurman et al. 2009	Queen Street Parks Project	One previously recorded historic property encountered during subsurface investigation: Site **-6856**, a historic fishpond remnant.
Fong et al. 2009	Rehabilitation of Streets: Unit 9, Phase 1	No human remains or historic properties recorded.
Pammer et al. 2009	Alapai Transit Center	15 test trenches excavated; 3 additional historic trash pits observed (Site **-6901**)
Pammer and Hammatt 2010	Moana Vista Project Area, Kapi‘olani Blvd.	Archaeological assessment; no historic properties or features observed.

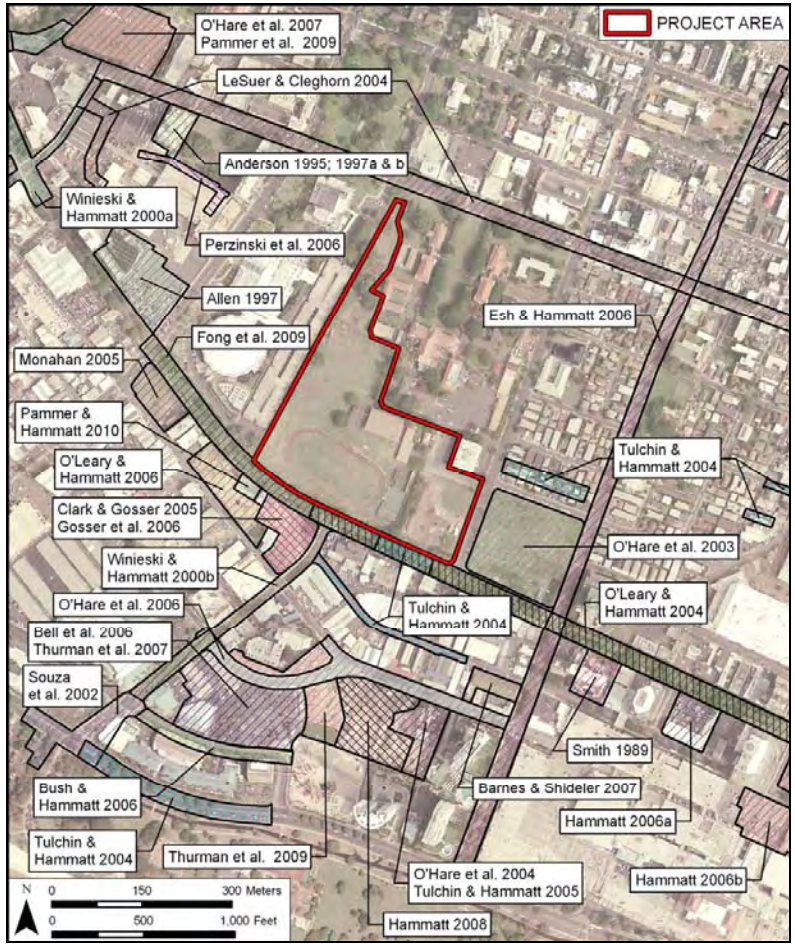

Figure 28. Locations of previous archaeological work near the project area (base map: 2005 U.S. Geological Survey Orthoimagery)

4.2.1 Area West of Ward Avenue

In 2006, CSH conducted an archaeological inventory survey in an area between King Street and Ward Avenue, adjacent to the Roman Catholic Cemetery and a HECO building (Perzinski et al. 2006). The survey consisted of the excavation of six trenches and nine pile caps. The stratigraphic sequence consisted generally of fill from 0-50 cmbs. Black cinder was generally encountered near the interface of the water table and a sand/cinder mixed layer (at approximately 1.7 m below the surface). Below the cinder was the coral limestone bedrock of the Honolulu plain deposited during a prior high stand of the sea.

No discrete pre-contact cultural layers were encountered, though a mixed historic layer was observed below the fill layers. The layers had a sparse mixture of historic trash and very little shell midden, and they are believed to be part of the historic land filling. No charcoal was observed in any of the trenches suggesting a lack of pre-contact habitation within the premises of the project area. During the inventory survey, one previously identified site (SIHP# -5455; two human burials) was documented within the project area. The burials consisted of two historic coffin burials believed to be associated with the adjacent Roman Catholic Cemetery. The burials were located outside of the presently delineated cemetery property; however, based on their position, orientation, and coffin interment, it is suggested that the cemetery once encompassed this portion of the project area.

4.2.1.1 Kaka‘ako Improvement District 3 (ID-3) and Pohulani Elderly Housing

Between November 1990 and September 1992, CSH monitored construction at the Kaka‘ako Improvement District 3 area, the Pohulani Elderly Rental Housing project area, and the Kauhale Kaka‘ako Project area (Winieski and Hammatt 2000a). The monitoring of sub-surface excavations revealed that although the area had been previously disturbed to a great extent, a cultural layer and in situ Jaucas sand and volcanic cinder deposits were still intact below fill layers. The cultural layer contained historic artifacts mixed with scant traditional Hawaiian cultural materials. Twenty human burials were discovered during these projects, nine at the Pohulani Elderly Rental Housing project (SIHP# 50-80-14-4380) and 11 in and around Mother Waldron Park (SIHP# 50-80-14-5820).

4.2.1.2 One Archer Lane

Ogden Environmental and Energy Services Co., Inc. (OGDEN) carried out a subsurface inventory survey at One Archer Lane (Anderson 1995). Eight backhoe trenches were excavated, and historic subsurface features (SIHP # 50-80-14-5373) were encountered. OGDEN then carried out archaeological monitoring at the site in 2006 (Anderson 1997a). During the course of monitoring, a single human burial (SIHP# 50-80-14–5455) was inadvertently encountered. An additional concentration of 29 burials (included in SIHP# 50-80-14-5455) was also inadvertently encountered during construction activities. Analysis of all burials showed that they dated from the mid-1800s to the 1920s, suggesting that the burials were associated with the adjacent Catholic Cemetery. OGDEN also completed subsurface testing of the proposed reinterment plot for the previously discovered burials (Anderson 1997b).

4.2.1.3 Symphony Park

In 1995, paleo-environmental investigations were conducted within the Symphony Park construction site and the corner of Chapin and Clayton Streets in the Kewalo Wetlands area (Allen 1997). The activity consisted of both trenching and coring of the sediments. Eleven strata were identified. Layer I was historic fill. Layer II was the uppermost stratum of wetland sediment; a dark gray silt loam that was dated to A.D. 1400-1520 and 1570-1630. Pollen identified from this layer included *loulu* palm, *māmane* trees, sedges, and grasses. Pollen from plants introduced in the post-contact period was not present. Layers III through V were earlier wetland soils and contained partially decomposed organics. The pollen was dominated by *loulu* palms, *Cibotium*, the endemic *Myrsine*, and a few grains from the coconut, a Polynesian introduction. Layer III was dated to A.D. 1435-1665. Layer VI was a marine sediment, probably deposited during a time of high sea level during the Little Climatic Optimum, dated to A.D. 750-1300. Layer VII was a terrigenous layer that may represent the original surface at the time of Polynesian colonization. This layer was dated to A.D. 340-600. The pollen results from this layer suggest that the area was still a marsh, but the high incidence of Cheno-am pollen, which is a sign of disturbance, may indicate the cultural use of the area by the Polynesians. The lowest layers represented the changes that occurred as the local area changed from a marine bay to a lagoon and eventually to a marsh.

4.2.1.4 Alapai Transit Center

In 2007, CSH completed an archaeological inventory survey of the Alapai Transit Center and Joint Traffic Management Center project area (O’Hare et al. 2007). Twenty-eight six-meter-long backhoe trenches were excavated within the project area. Two cultural resources were identified: SIHP# 50-80-14-6901, four post-contact trash pits containing historic material dating to the late nineteenth to early twentieth century (ca. 1850-1920) and SIHP# 50-80-14-6902, three human burials.

In 2009, CSH conducted an additional archaeological inventory survey at the Alapai Transit Center (Pammer et al. 2009). Fifteen test trenches were excavated in order to document potential subsurface cultural deposits and stratigraphy. An additional three historic trash pit features were observed (included in SIHP# 50-80-14-6901), which contained historic materials including bottles, ceramics and faunal bone.

4.2.2 King Street

In 2004, Pacific Legacy, Inc. conducted an archaeological assessment of King Street as part of an environmental assessment (LeSuer and Cleghorn 2004). The aim of the archaeological assessment was to determine the potential for archaeological resources to be located in the vicinity of the project area. No fieldwork was involved in this assessment. Through archival research, it was determined that there were three areas that could contain archaeological features: the area surrounding the Catholic Cemetery on King Street and two traditional fishponds.

4.2.3 Area between Kamake‘e Street and Ward Avenue

In 2005, Scientific Consulting Services conducted an archaeological inventory survey on two parcels in Kaka‘ako near the corner of Ward Avenue and Kapi‘olani Boulevard (Monahan 2005).

Nine backhoe trenches were excavated. While archaeological monitoring was recommended for any future subsurface activity, no burials or significant artifacts were encountered.

In 2005, CSH conducted an archaeological inventory survey of the 4-acre Moana Vista project area between Kapi‘olani Boulevard and Waimanu Street (O’Leary and Hammatt 2006). Although 24 backhoe trenches were excavated, no finds, either pre-contact or historic, were found. A large percentage of the project area had been previously disturbed and excavated; the remaining area had some Jaucas sand below fill, but no cultural material was found in this stratum.

In 2005, Pacific Consulting Services, Inc. conducted a subsurface archaeological inventory survey of a project area on the southwest corner of Kapi‘olani Boulevard and Kamake‘e Street (Clark and Gosser 2005). Despite the excavation of 45 trenches, no historic or pre-contact findings were reported, with the exception of a previously described remnant of a small pond (SIHP# 50-80-14-6636). In 2006, Pacific Consulting conducted monitoring at this same site (Gosser et al. 2006). During monitoring, a previously identified, buried “A” horizon was observed in the southern portion of the project area.

In April 2010, CSH conducted an archaeological assessment for the Moana Vista Project on Kapi‘olani Boulevard (Pammer and Hammatt 2010). Four trenches were excavated in order to document potential subsurface cultural deposits and stratigraphy. No historic properties or features were observed. The stratigraphic sequence across the project area included large amounts of fill. The fill material ranged from terrestrial mixed soils to primarily crushed coral fill and marine pumped dredge material. Underlying the fill layers was a natural peat material, overlying natural marine clay, which was directly overlying the coral shelf. The stratigraphy indicated there was a relatively low possibility of encountering historic properties throughout the majority of the project area.

4.2.3.1 Kaka‘ako Improvement District 4 (ID-4)

The Kaka‘ako Improvement District 4 project was located on the road alignment of Kamake‘e Street between Queen Street and Kapi‘olani Boulevard. From August 1995 through August 1996, archaeological monitoring for the Kaka‘ako ID-4 construction project was conducted by CSH (Winieski and Hammatt 2000b). The project documented two isolated historic coffin burials (SIHP# 50-80-14-4498) on the southeastern side of Kamake‘e Street, between the intersections of Kawaiaha‘o and Waimanu Streets. The two burials, adjacent to one another, were within an undisturbed sand deposit directly underlying an “A” horizon, which itself underlay approximately 50 cm of construction fill and pavement. Well-defined burial pits were present, as well as staining from the deteriorated coffin wood. No associated artifacts, other than the coffins, were discovered during disinterment. Additionally, during excavation for a manhole hookup approximately two meters west of Kamake‘e Street on Waimanu Street, a horse or mule skeleton was discovered within the undisturbed sand layer, approximately one meter below the surface. No other materials were observed during the Kaka‘ako ID-4 project, except for randomly scattered bottles and bottle fragments of modern provenience discovered within fill materials. One “Star Soda Works” bottle was dated to ca. 1900.

4.2.3.2 Kaka‘ako Improvement District 7 (ID-7)

The Kaka‘ako ID-7 project performed improvements to drainage, water, sewer, and utility systems on Kamake‘e Street between Queen Street and Ala Moana Boulevard and also extended the drain system from Ala Moana Boulevard to Kewalo Basin (Souza et al. 2002). The project additionally included the realignment of the existing Kamake‘e Street between Auahi Street and Ala Moana Boulevard.

During excavation activities associated with the ID-7 construction project, three human burials were encountered. Burial 1 (SIHP# 50-80-14-6376), a single cranium, was inadvertently discovered by Delta Co. personnel on October 13, 2000 in the base yard backdirt pile. The backdirt pile derived from a trench at the intersection of Ala Moana Boulevard and Kamake‘e Street. Burial 2 (SIHP# 50-80-14-6377), an adult individual, was encountered by an archaeologist during backhoe excavations for a box drain on Kamake‘e Street. The burial was within an undisturbed sand deposit. Burial 3 (SIHP# 50-80-14-6378), consisting of a femur and several rib fragments, was recovered in the Delta Co. base yard on Pensacola Avenue and Kapi‘olani Boulevard. The original location of the burial could not be determined.

Ten profiles were described and drawn, beginning with P1 at the junction of Kamake‘e with Queen Street at the north end to P1 through P3 at the junction of Kamake‘e with Ala Moana Boulevard at the southern end. Most of the excavations occurred in previously disturbed fill material. As expected, the land comprising Ala Moana Beach Park and the Kewalo Basin consisted totally of fill material, as the areas were seaward of the shoreline in pre-contact and early historic times. Natural deposits, though discontinuous, were exposed most frequently along the ‘*ewa* (west) and Diamond Head (southeast) sides of Kamake‘e Street, extending down to Ala Moana Boulevard.

4.2.4 Area Between Kamake‘e and Pi‘ikoi Streets

In 2005, archaeological monitoring was conducted for Hawaiian Electric Company’s trenching of the Hokua Tower project on Auahi Street (Bush and Hammatt 2006); the project included a portion of the Hokua Towers lot. No archaeological finds were encountered during monitoring.

In 2007, CSH conducted a field inspection of a 0.74-acre lot for the proposed 1235 Kona Street/1226 Waimanu Street Reserved Housing Project (Barnes and Shideler 2007). Field inspection was limited to visual inspection from the adjacent sidewalks along Waimanu and Kona Streets. Most of the project area was in light industrial-use warehouses. The entire project area was covered with structures, cement, or asphalt. This study noted many burial finds within a kilometer of the project area. Many of the previous burial finds in the vicinity were suggested to possibly be associated with a former geographic feature (a higher sand dune on the seaward side of Kolowalu Pond) to the west, and thus burial densities in the vicinity of the present project area (which appears to have been more marshy) could be expected to be lower. The likelihood of burial finds in the project area was thus evaluated to be less than for several other areas of Kaka‘ako.

4.2.4.1 Ko‘olani Heights (Sunset Heights)

In September of 2003, CSH completed fieldwork pertaining to the archaeological inventory survey of the proposed Ko‘olani (also called Sunset Heights) project (O’Hare et al. 2004). The project area was located on Waimanu Street, bounded by the Hawaiki Tower to the east, the Nauru Tower to the south, and the Queen Street Extension Project to the west. The archaeological inventory survey primarily consisted of subsurface testing, as the project area had undergone previous stages of filling and surface clearing. The majority of the project area at the time of the survey was paved asphalt, with additional landscaped and bare-earth areas. Subsurface testing consisted of 13 trenches excavated with the use of a backhoe. Subsurface testing indicated the presence of undisturbed sand in the southwestern (*makai*) portion of the project area. The stratum that represented the original wetland surface was designated SIHP# 50-80-14-6636. Three historic garbage pits, all with artifacts dating to the first three decades of the twentieth century, were designated SIHP# 50-80-14-6639 (two pits) and SIHP #50-80-14-6641 (one pit). The remaining trenches contained primarily mixed dry fill materials over hydraulic fill materials over the coral shelf.

Tulchin and Hammatt (2005) conducted additional trenching at the Ko‘olani site and recovered numerous historic artifacts, mostly glass bottles. There was no evidence of pre-contact cultural materials, early historic development, or human remains throughout the subsurface testing area. However, in the course of archaeological monitoring for a portion (west side) of this project in 2003 to 2004 (Hammatt 2008), eighteen burials were encountered. Two of these burials were isolated, single burials (SIHP# 50-80-14-6910 and -6912), while the other 16 burials comprised a cluster of coffin burials (-6911). This cluster of coffin burials appears to be a discrete historic cemetery.

4.2.4.2 Kaka‘ako Improvement District 10 (ID-10)

In 2006, CSH completed fieldwork pertaining to the ID-10 project (O’Hare et al. 2006). The project concerned improvements to drainage, water, sewer, and utility systems on Queen Street and Waimanu Street beginning at Kamake‘e Street and ending at Pi‘ikoi Street. During monitoring of the construction, 30 human burials were found and disinterred. The analysis of the distribution of the burials and the associated grave goods indicates that 28 of the burials (SIHP# 50-80-14-6658) constituted a cemetery located on the lip of Kolowalu Pond and possibly used between the 1840s and the 1880s. Two burials (SIHP# 50-80-14-6659) were isolated finds and were not related to the main cemetery cluster. Historic trash pits (SIHP# 50-80-14-6660) were also discovered during monitoring intruding into the eastern edge of the cemetery. The human remains and associated grave goods were reburied on-site in a specially constructed vault complex.

Six stratigraphic strata were described from the area: Stratum I consisted of a number of twentieth century fill layers (designated Ia-Ii). These strata often contained historic trash dating to the 1920s and 1930s. Substrata Ia-Ih were dry fills. Substratum Ii was a wet fill material consisting of dark reddish-brown fine clay that was dredged from inshore or offshore waters and hydraulically pumped as a slurry of fine-grained sediments into the wetland area during the reclamation of the Kewalo area in the 1920s and 1930s. Strata II and III consisted of well-sorted fine sands; each had a weak “A” horizon at the top of the stratum. Stratum IV was a layer of coarse sand representing an unconsolidated reef deposit. Stratum V was a gleyed or clay layer,

which represents the original pre-contact to early post-contact marshy environment of the area. Stratum V was subdivided into two substratum, a light greenish gray gleyed clay (Va), and a gray clay mixed with decomposing coral (Vb). Stratum V was interpreted as the result of the creation of a low-energy depositional environment, with fine silts and clays deposited by low-velocity water. Stratum VI was the coral bedrock shelf.

4.2.4.3 Victoria Ward Village Shops

In 2006, CSH performed an archaeological inventory survey for the Victoria Ward Village Shops project (Bell et al. 2006) adjacent to the Kaka‘ako ID-7 project area and bounded by Auahi Street to the south and Kamake‘e Street to the east (Bell et al. 2006). A total of 86 trenches were excavated in the project area.

The common stratigraphic element within the project area is the ubiquitous historic and modern fill layers that were documented immediately below the surface in all trenches. These fill layers included crushed coral rubble; terrigenous clays and clay loams; marine hydraulic dredge clays and silts that were pumped into the project area from dredging operations off shore of Ala Moana Beach Park and Kewalo Basin; asphalt layers, often associated with basalt gravel base courses; and rusted metal and glass trash layers, likely from the old Kaka‘ako incinerator (i.e.; at SIHP# 50-80-14-6660).

During the inventory survey, three sites were reported, SIHP# 50-80-14-6854, SIHP# 50-80-14-6855, and SIHP# 50-80-14-6856 (Bell et al. 2006). Site -6854 is a subsurface cultural layer/activity area remnant that contained an immature pig skeleton, remnants of a historic privy, remnants of a culturally enriched “A” horizon (containing both historic and pre-contact cultural material), and human burials. Site -6855 is an activity area remnant comprised of human burials and a pronounced subsurface traditional Hawaiian cultural layer. Site -6856 is a historic fishpond remnant, part of Land Commission Grant 3194, “Kolowalu,” awarded to Kalae and Kaaua.

A number of inadvertent finds of traditional Hawaiian burials were uncovered during construction monitoring at the site, as noted in a preliminary report (Thurman et al. 2007). Of historic interest in the monitoring results is the frequent discovery of late nineteenth century ammunition and animal burials. The project overlapped with the areas shown on historic maps as a rifle range (1893) and an animal quarantine station (1911), which probably explains the presence of these items.

4.2.4.4 Queen Street Parks Project Area

In June 2009, CSH completed an archaeological inventory survey of the Queen Street Parks project area (Thurman et al. 2009). A total of 29 test units encompassing 168 square meters of the Queen Street Parks project area’s surface were excavated in order to document potential subsurface cultural deposits and stratigraphy.

One historic property was encountered during this inventory survey investigation: SIHP# 50-80-14-6856, “Kolowalu,” a historic fishpond remnant, part of Grant 3194, awarded to Kalae and Kaaua. This fish pond was previously documented in the adjacent Ward Village project area and was recommended for the Hawai‘i Register under criterion D (for its information content).

The stratigraphic sequence across both the *mauka* and *makai* sections of the proposed park included a minimum of one meter of fill everywhere tested. The fill material ranged from

terrestrial mixed soils with some historic-era artifacts to primarily crushed coral fill. Below the fill layers was generally a thin organic “A” horizon and pond sediments. In a few cases, Jaucas sands were encountered (Trenches 5, 20, 23, and 29). Trenches 5, 20, and 29 were just outside of Kolowalu Pond, and therefore the presence of sand was somewhat anticipated. Trench 23, however, would have been, based on map references, within the pond. The presence of sand in Trench 23 is suggestive of an isolated sand pit within the pond or potentially, relatively clean, homogenous sand from the surrounding area used as fill material. Trenches excavated close to Trench 23, Trenches 15 and 25, contained primarily fill sediment down to the hard coral shelf. In general, modern construction activity had affected the subsurface conditions, especially the two large dewatering basins that were located in the *makai* section of the proposed park.

4.2.5 McKinley High School Area

In 2009, CSH completed an archaeological monitoring plan for a portion of the McKinley High School Athletic Complex Master Plan Project (O’Hare et al. 2009). This area included the softball stadium and the girl’s locker room and shower facility. The monitoring plan specified that an archaeological monitor would be on-site during all ground-related disturbance activity below 18 in (0.45 m), due to the cultural sensitivity of the area and the number of burial finds already encountered in the vicinity of the project area. No fieldwork was performed under this monitoring plan.

4.2.6 Pi‘ikoi Street and Kapi‘olani Boulevard Area

In 2003, CSH completed an archaeological inventory survey of an approximately 6-acre parcel lying between Kapi‘olani Boulevard and Pi‘ikoi, Kamaile, and Pensacola Streets (O‘Hare et al. 2003). No burials were found in the 24 trenches excavated during the inventory survey, but historic trash pits (SIHP# 50-80-14-6637) and a new defined berm related to agricultural activities (SIHP# 50-80-14-6636) were documented. SIHP# -6636 consists of the pre-contact to early twentieth century land surface that underlies the dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects, which took place in the 1920s and 1930s. This land surface is a wetland deposit (Stratum III), which was thought likely to extend across the 6-acre parcel. This site also contains a sand berm that crosses the southeast corner of the project area near the intersection of Pi‘ikoi Street and Kapi‘olani Boulevard. This sand berm is illustrated on an 1884 map and may have been constructed in traditional Hawaiian times. SIHP# -6637 consists of a trash dump found in six trenches, all located in the northeast corner of the project area near Pi‘ikoi Street. The trash pit contained wood, brick, tires, ceramic dinnerware, insulators, rusted metal, and glass bottles. Many of the glass bottles were dated to the 1920s through 1940s. The type of material present did not seem to be individual household garbage, but may be related to the businesses in the surrounding area.

In 2004, CSH completed a literature review and field check for the Kapi‘olani Area Revised Sewer System project (Tulchin and Hammatt 2004). The project was composed of nine sub-areas, with sewer line reconstruction parallel to the existing sewer lines on Kalauokalani Way, Atkinson Drive, Rycroft Street, an easement off Cedar Street, an easement off Pensacola Street, Kona Street, Kapi‘olani Boulevard, and on Ala Moana Boulevard. No subsurface testing was conducted as part of the archaeological assessment. No surface archaeological or historical

features were observed at any of the nine sub-areas. Background research of previous archaeology in the area suggested a high probability of encountering human skeletal remains.

4.2.6.1 Kapi‘olani Boulevard

In 2009, CSH conducted archaeological monitoring for a street rehabilitation project within Honolulu and Waikīkī (Fong et al. 2009). No human remains or historic properties were identified. Beneath road infrastructure material, additional fill sediments from the development of the area were observed throughout the project route. Beneath the various fill layers, clay and gley sediments were recorded that may be natural deposition related to the wetland agriculture surface that existed until the early twentieth century. This is supported in part by the discovery of land snail shells and decomposing organic debris found within layers of apparent pond material. Pockets of historic trash were found in rather sporadic locations; however, only one clearly defined pit feature was encountered and was interpreted as having been deposited by residential and farming activities prior to 1930 when Kapi’olani Boulevard was constructed and the area was filled in by those construction activities.

Archaeological monitoring for the emergency phase rehabilitation of streets: Unit 9, Phase I project, located on Kapi‘olani Boulevard from Kalākaua Avenue to Kamake‘e Street, was conducted by CSH in 2004 (O’Leary and Hammatt 2004). No archaeological remains were encountered during the excavation of the five trenches and five sewer manholes during the emergency phase of sewer rehabilitation; all of the excavations were shallow and took place in sediments which had been excavated previously and/or were construction fill.

4.2.6.2 Pi‘ikoi Street

Monitoring for the Rehabilitation of Streets, Unit 5B project on Pi‘ikoi Street between Ala Moana Boulevard to the south and Matlock Street to the north in urban Honolulu was conducted by CSH in 2004 (Esh and Hammatt 2006). Construction activities in the area primarily consisted of the resurfacing of Pi‘ikoi Street. This activity did not extend deeper than 30 centimeters below base course, and did not require archaeological monitoring. Construction activity requiring monitoring was limited to excavations at the intersection of Pi‘ikoi and Young Streets for traffic signal improvements. No cultural materials were encountered during monitoring.

4.2.7 Area East of Pi‘ikoi Street

In 1989, the State Parks archaeologist reported that one human burial was inadvertently found at a construction site at 1341 Kapi‘olani Boulevard (Smith 1989).

In May 2006, CHS conducted a literature review and field inspection of a parcel of land on Kapi‘olani Boulevard (Hammatt 2006a). No surface historic properties were observed within the project area.

From December 2005 through March 2006, CSH conducted an archaeological inventory survey for the Ala Moana Center Expansion Project (Hammatt 2006b). One historic feature (SIHP# 50-80-14-6847) was observed: a wooden box containing a mix of historic artifacts, including printed material (likely either the remains of a book or newsprint), wooden chopsticks, pig bone, a horse brush, a fragment of cane slag, a bottle fragment, and a spherical blue bead.

4.3 Background Summary and Predictive Model

Previous archaeological studies and background research suggest that the present study area is located in a region that, before the nineteenth century, was less extensively populated than the nearby centers of Waikīkī and Honolulu. However, maps and documents produced during the nineteenth century indicate that the Kewalo region had been utilized by the Hawaiians for fishpond farming, salt making, wetland agriculture, and burial. It is likely that some pre-contact cultural deposits including pit features and/or burials remain intact beneath the late nineteenth and early twentieth century fill layers covering Kewalo today.

The project area is located mostly in what was the wetland plain of Kewalo. This area provided ancient Hawaiians with the environment needed for the cultivation of fishponds, salt ponds, and subsistence crops such as taro. The current project area can be seen located among fishponds and salt ponds on the 1855 de LaPasse map (see Figure 8). The features expected from these cultural activities include berms, *lo‘i* (irrigated ponds), and fishpond sediments.

Following the initial years of European contact, Westerners engaged in new massive agricultural ventures. Immigrant workers from Asia were brought to Hawai‘i to labor in these new agricultural ventures, and as a result, rice also became a major crop in many areas. The wetlands of Kewalo were an ideal environment for the cultivation of rice, and the area yielded much of its traditional taro cultivation land to rice production. This is evident on the 1897 Monsarrat map (see Figure 10).

In the early twentieth century, the land was altered more intensely for land-reclamation plans; the resulting dredge and fill projects obliterated what remained of traditional Hawaiian cultivation practices in the wetlands of Kewalo. The original wetland sediments as well as historic fill have been previously documented within the vicinity of the current project area and will most likely be encountered during the proposed archaeological inventory survey.

Burial densities in the vicinity of the present project area (which appears to have been mostly wetlands) could be expected to be lower than other areas where more sandy layers are present. Nevertheless, previous archaeological reports have documented human burials—both pre-contact Hawaiian and historic—throughout the greater Kaka‘ako area, which includes the Kewalo area. Isolated burials and burial clusters have been found primarily in sandy deposits, just above the water table and below historic-era fill materials. Two documented historic cemeteries near the current project area were also located in sandy deposits.

Section 5 Archaeological Inventory Survey Methodology

This section details the methods to be used by CSH personnel during fieldwork, laboratory analysis, and the preparation of the archaeological inventory survey report for the McKinley High School Athletic Complex Master Plan project (shown on Figure 1-Figure 6). This research design is intended to meet the specifications for an inventory survey plan as outlined in HAR Chapter 13-13-276.

5.1 Personnel

Fieldwork for the archaeological inventory survey will be carried out under the supervision of principal investigator Hallett H. Hammatt, Ph.D. It is anticipated that the field crew will consist of four archeologists, and field work will take approximately seven days to complete, for a total of 28 person days.

5.2 Field Methods

The research design for the planned archaeological inventory survey includes a 100% pedestrian inspection of the project area to ascertain the age of standing architecture and whether there are surface historic properties. Following the pedestrian inspection, the archaeological fieldwork will focus on a program of pre-demolition subsurface testing with a combination of backhoe-assisted and hand-excavated trenching to locate and characterize any buried cultural deposits, which based on the results of background research, CSH expects to find beneath layers of historic-era and modern fill. Historic-era is defined as anything older than 50 years and modern is defined as anything younger than 50 years.

Previous archaeological studies and background research suggests that the present study area is located in a wetland region that had primarily been used for fishpond farming, salt making, and wetland agriculture, with some burial use in infrequent areas of undisturbed sandy deposits.

The subsurface testing program will consist of the excavation of 28 (6 m long by 0.8 m wide) backhoe-assisted trench excavations for a total surface excavation of approximately 134 m². Trenches will be distributed throughout the project area to assess the stratigraphy and potential for subsurface historic properties within the project area. Trenches will not be placed within the areas covered by the new softball stadium and the girl’s locker room and shower facility, as these areas are covered already under an approved monitoring plan. The testing program will also focus on characterizing the remnants of the project area’s buried land surface that predates historic and modern fill layers, as the older land surface is more likely to be associated with significant cultural deposits. Figure 29 illustrates proposed test trench locations within the current project area.

5.2.1 Rationale Underlying Subsurface Test Trench Location Selection

The proposed archaeological inventory survey seeks to make a good faith effort at sampling both in terms of total area of testing and test trench distribution. The main consideration is to focus subsurface testing under the footprint of areas of proposed subsurface disturbance. The

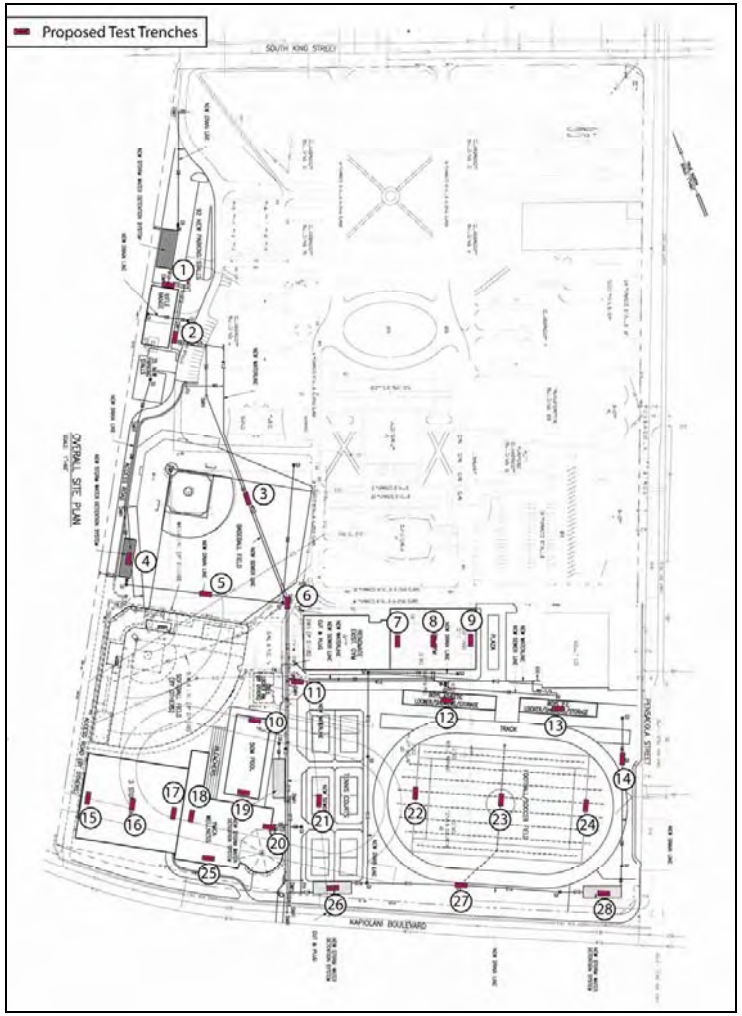

Figure 29. Locations of proposed test trenches across project area

greatest disturbances are anticipated to be associated with the new 50-m swimming pool, the new gym, the new YMCA wellness center, and the new three-story parking garage.

Other test trench locations have been specifically located in order to sample areas of indicated less intensive and extensive subsurface impact. These areas include the track/football field, baseball field, and tennis courts.

The specific selection of proposed trenches took into consideration the available data on known utilities, so as to avoid areas of known significant prior ground disturbance. For health and safety reasons, as well as practicality, trench locating tried to avoid certain areas of particularly high vehicular and pedestrian traffic.

5.2.2 Subsurface Testing

Trench excavation methodology for the 28 backhoe-assisted trenches will, if necessary, initially consist of saw cutting of asphalt and concrete surfaces. A standard backhoe with a two-foot wide bucket typically will be used to excavate overlying fill deposits. If mechanical advantage is not feasible in some areas, the excavation will be conducted entirely by shovel and trowel. If undisturbed, in situ, sand deposits are encountered, excavation will initially be conducted by hand. This hand excavation in sand deposits will be specifically undertaken to identify potential buried cultural deposits, including human burials, prior to excavation with a backhoe. The sand will be carefully scraped off with shovel and trowel in thin layers in order to minimize any possible disturbance to the cultural deposits. Only after the sand deposits are confirmed to be culturally sterile, will a backhoe be utilized to resume excavation to the coral shelf or water table.

Archaeologists will closely monitor all backhoe excavation activity, particularly through sand deposits. In sand deposits, at least two archaeologists will monitor backhoe excavation, one positioned at either end of the trench to monitor both the removal of sediment from the trench and the emptying of the backhoe bucket onto the adjacent backdirt pile.

5.2.3 Determination of Need for Additional Supplementary Test Trenching

This AISP proposes an initial testing strategy. Should there be significant finds, there will be consultation between the archaeologist and the State Historic Preservation Division regarding the specifics of additional supplementary test trenching. It is assumed that if an in situ burial or any articulated human skeletal remains are encountered, then supplementary test trenching, under the terms of the archaeological inventory survey, would be appropriate to better characterize the nature, density, and distribution of cultural resources and/or human skeletal remains in the immediate area. In the absence of particularly significant finds, however, it is suggested that the proposed archaeological inventory survey strategy is appropriate and sufficient. Should significant non-burial finds be encountered (such as a particularly rich pre-contact cultural layer or a unique artifact type), it is to be understood that an archaeological data recovery program may be appropriate and would be determined in consultation with the SHPD.

5.2.4 Documentation of Stratigraphy

The stratigraphy in each trench will be drawn and photographed. Sediments will be described for each of the trenches using U.S. Department of Agriculture soil description observations/

terminology. Sediment descriptions include Munsell color, texture, consistency, structure, plasticity, cementation, origin of sediments, descriptions of any inclusions such as cultural material and/or roots and rootlets, lower boundary distinctiveness and topography, and other general observations. If burial pits or other cultural features are exposed, these will be carefully represented on the trench profile. Feature documentation will include profile maps and/or plan view maps, collected samples, stratigraphic descriptions, and photographs.

5.2.5 Sampling

If identified, the sampling of subsurface cultural layers and/or "A" horizons will be carried out to characterize the cultural content of these layers. Sampling will also help to establish geographic boundaries for these layers and the general time frame of their deposition (pre-contact/traditional Hawaiian, and/or post-contact, and/or modern). Samples will be excavated out of the sidewall or from the base of the excavation (if not exposed in profile) into five gallon (20 liter) buckets. The sediment will then be screened through 1/8-inch (3.2 mm) mesh, and all cultural materials will be collected, bagged by provenience, and returned to the laboratory.

5.2.6 Identification of Historic Properties

If any significant cultural deposits are discovered, the SHPD will be informed immediately, and the cultural deposits will be treated in accordance with a program approved by the SHPD.

If human remains are identified, the SHPD will be notified immediately, and the remains shall not be disturbed further and no further work will take place (including screening of backdirt, cleaning and/or excavating the burial area, and exploratory work of any kind) unless specifically requested by the SHPD. Skeletal element inventory forms, plan view and profile drawings, and written descriptions will be prepared to document any burials if so directed by the SHPD. Burial and any other significant feature locations will be recorded with GPS (sub-meter horizontal accuracy).

Additional trenches may be excavated (in consultation with the SHPD) to search for further burials in the vicinity. Again, initially the backhoe will be used to remove only the fill overburden, and hand-shovel trenching will be undertaken prior to using the backhoe within sand deposits. As appropriate, plan view maps will be prepared to record horizontal provenience of finds, such as burials or pit features, associated with a cultural layer.

5.2.7 Global Positioning System Documentation

The location of significant features and each of the trenches will be recorded using a Trimble Pro XR mapping-grade GPS unit with a TSCI Datalogger and real-time differential correction. This unit provides sub-meter horizontal accuracy in the field. GPS field data will be post-processed, yielding horizontal accuracy to between 0.3 and 0.5 m. GPS location information will be converted into GIS shape files using Trimble's Pathfinder Office software, version 2.80, and graphically displayed using ESRI's ArcGIS 9.1.

5.3 Laboratory Methods

This phase of work will involve the following specific procedures:

1. Charcoal samples will be submitted for radiocarbon dating, if available. Those samples containing pieces suitable for wood identification, as available, will be submitted for species analysis first. Selection of charcoal samples for dating will be based in part on the wood species findings.
2. Invertebrate remains collected from specific subsurface features or cultural layers will be identified to genus and species, weighed, and analyzed. Data will be tabulated by depth and stratigraphic unit. Common marine shells will be identified and analyzed at the CSH laboratory in Waimānalo, using an in-house comparative collection and reference texts (e.g., Abbott and Dance 1990, Eisenberg 1981, Kay 1979, and Titcomb 1979). If any rare and/or extinct marine or freshwater shells are recovered, an outside expert will be consulted for identification of the material. The total weight of any midden will be tabulated by collection unit.
3. Non-human vertebrate faunal material collected from specific subsurface features or cultural layers will be identified to the lowest possible taxa at the CSH laboratory using an in-house comparative collection and reference texts (e.g., Olsen 1964, Schmid 1972, and Sisson 1914). If a large number of bird or fish bones, or any unusual bones, are recovered, they will be submitted to an expert in faunal analysis for identification. The total weight of any midden will be tabulated by collection unit.
4. Identification and cataloguing of traditional Hawaiian artifactual material will be completed. Artifacts will be measured with representative samples photographed and/or drawn to scale. The forms and functions of the artifacts will be determined using reference material (e.g., Barrera and Kirch 1973, Brigham 1974, Buck 2003, and Emory et al. 1968).
5. Identification and cataloguing of historic artifacts will be completed. This research will focus on the function and manufacturing dates of the items, using reference texts (e.g., Bureau of Land Management 2008, Elliott 1971, Elliott and Gould 1988, Fike 1987, Lebo 1997, Lister and Lister 1989, Millar 1988, Munsey 1970, Toulouse 1971, and Zumwalt 1980).
6. A comprehensive catalogue of all collected cultural material will be prepared and included with the archaeological inventory survey report.

5.4 Historic Property Evaluation for Hawai‘i Register Eligibility

Under state of Hawai‘i historic preservation legislation, historic property significance is evaluated and expressed as eligibility for listing on the Hawai‘i Register of Historic Places (Hawai‘i Register). To be considered eligible for listing on the Hawai‘i Register, a historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following broad cultural/historic significance criteria: “A” reflects major trends or events in the history of the state or nation; “B” is associated with the lives of persons significant in our past; “C” is an excellent example of a site type/work of a master; “D” has yielded or may be likely to yield information important in prehistory or history; and “E” has traditional cultural significance to an ethnic group, including religious structures and/or burials. For the AIS report, historic property integrity and significance will be based on

the guidance provided in National Register Bulletin #15, “How to Apply the National Register Criteria for Evaluation.”

5.5 Report Preparation

An archaeological inventory survey report will be prepared in conformance with HAR 13-276-5. This inventory survey report will include the following:

a. A topographic map of the survey area showing the locations of all historic properties.
b. Results of consultation with knowledgeable community members about the property and its historical and cultural issues.
c. Descriptions of all historic properties with selected photographs, scale drawings, and discussions of functions.
d. Historical and archaeological background sections summarizing pre-contact and post-contact land use as they relate to the project area’s historic properties.
e. A summary of historic property categories and their significance in an archaeological and historic context.
f. Recommendations based on all information generated that will specify what steps should be taken to mitigate impact of development on the project area’s significant historic properties—such as data recovery (excavation) and preservation of specific areas. These recommendations will be developed in consultation with the client and the State agencies.

A draft of the archaeological inventory survey report shall be prepared and submitted in a timely manner, within three months following the end of fieldwork. Following the receipt of review comments on the draft report from the SHPD, the revised and corrected report shall be submitted within one month.

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Appendix C
TRAFFIC IMPACT ASSESSMENT REPORT

MCKINLEY HIGH SCHOOL
ATHLETIC COMPLEX MASTER PLAN
TRANSPORTATION IMPACT STUDY

Final Report

Prepared for:

Group 70 International, Inc.

AECOM

January 11, 2011

McKinley High School
Athletic Complex Master Plan
Transportation Impact Study

Final Report

January 11, 2011

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1.0 INTRODUCTION

This analysis has been conducted to assess the potential transportation impacts associated with the McKinley High School Athletic Complex Master Plan, herein referred to as the "Project". The Project is proposed to be located on the campus of McKinley High School, located at 1039 South King Street in Honolulu, Hawaii. The following transportation topics were addressed:

- Traffic conditions;
- Transit conditions;
- Pedestrian conditions;
- Bicycle conditions;
- Parking conditions;
- Site access and circulation; and,
- Construction conditions.

1.1 PROJECT LOCATION

The Project is bounded by South King Street to the north, Kapiolani Boulevard to the south, Pensacola Street to the east and the Neal Blaisdell Center to the west. The Project location is illustrated in **Figure 1**. Currently, the Project site is occupied by the existing McKinley High School.

1.2 PROJECT DESCRIPTION

The Project consists of the following renovations at McKinley High School:

- Replacement of the existing track with football field;
- Replacement and expansion of tennis courts;
- Replacement of boy's P.E. / athletic locker rooms;
- Renovations to existing gym;
- Replacement of baseball field;
- Relocation of rifle range with additional adjacent parking (100 stalls);
- Construction of new gym adjacent to existing gym; and,
- Construction of new YMCA wellness facility with swimming pool and adjacent three-story parking structure (340 stalls).

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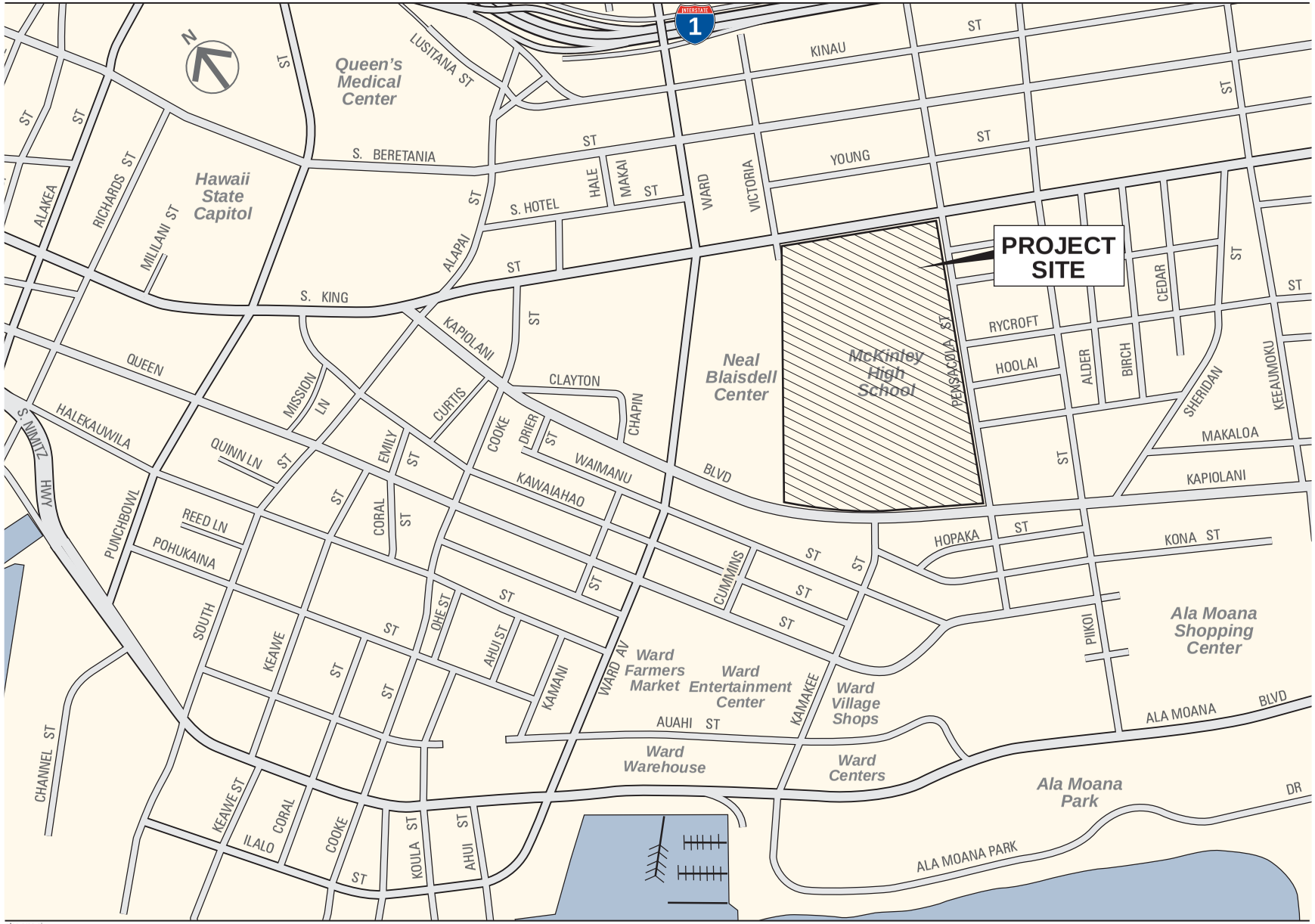


plan area.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 1

PROJECT LOCATION AND VICINITY

The Project includes improvements to the existing school facility and a new proposed use (a 46,000 square foot YMCA wellness facility). The new and upgraded school facilities may result in a potential increase in trips due to residents utilizing the new gym facility and club / team practices.; however, these events will not likely affect traffic conditions during weekday AM and PM peak periods given the proposed event times. There is no associated increase to student body or faculty / staff size due to the improvements; thus no additional trips are expected to and from the high school during weekday AM and PM peak periods. The new YMCA wellness facility, however, will generate new trips during the weekday AM and PM peak period, as it is a new land use to the site.

The Project can be accessed from a total of eight driveways from each of the three public rights-of-way bordering the Project—King Street, Pensacola Street, and Kapiolani Boulevard. An access road will be provided west of the Project that can be accessed from King Street and Kapiolani Boulevard. The Kapiolani Boulevard access will be primarily utilized to enter and exit the parking structure adjacent to the YMCA wellness facility.

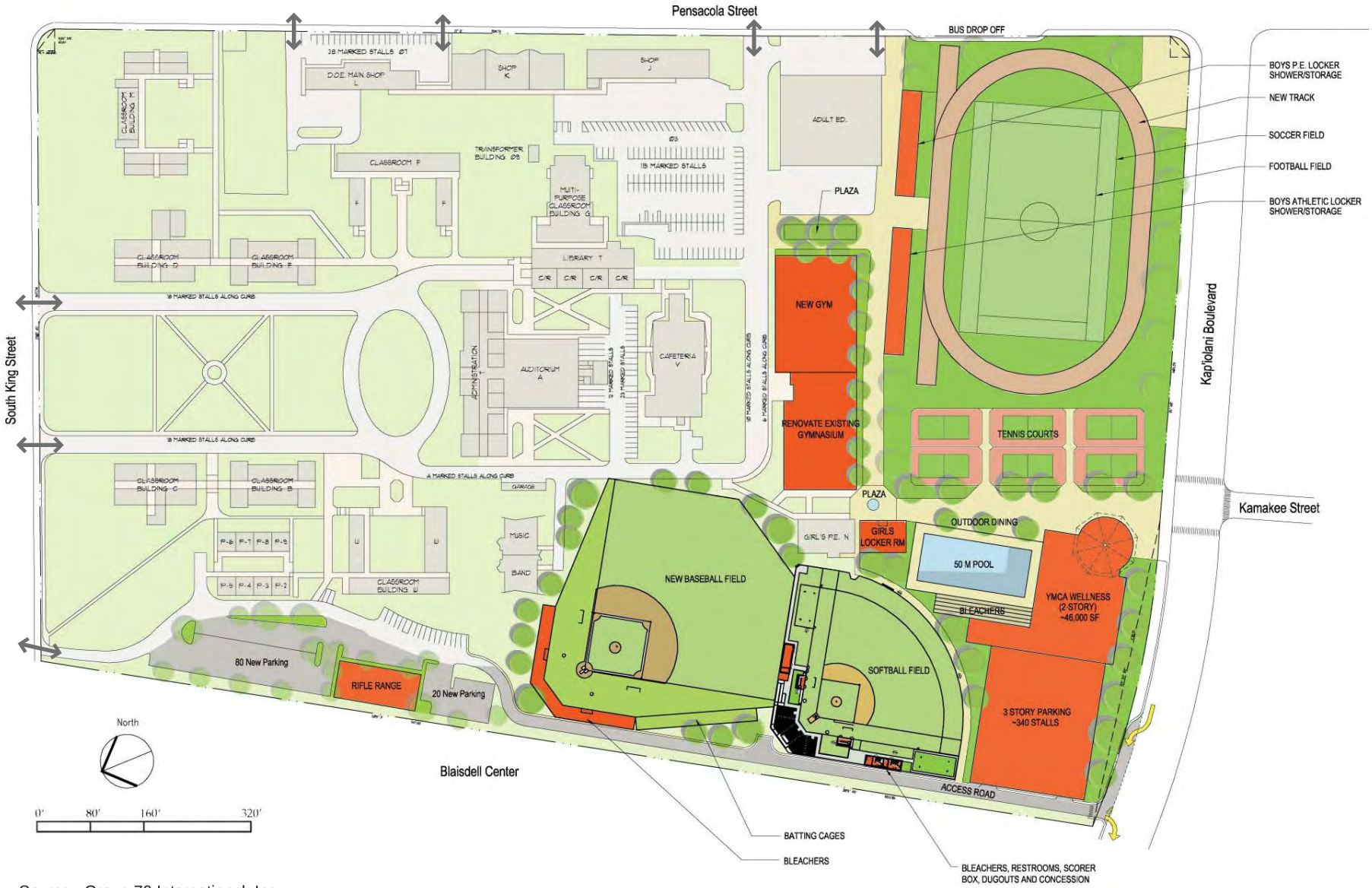
The three-story parking structure adjacent to the YMCA wellness facility has separate inbound and outbound driveways. The driveway operates as a right in, right out access. Only the outbound driveway has been analyzed, as vehicles using the inbound driveway would generally not be subject to delay. However, some minor queuing may occur at the inbound driveway, depending on the service rate and placement of the ticketing machines and the level of conflicting pedestrian traffic on the sidewalk. In general, the inbound driveway is not expected to result in any significant disruptions to traffic along Kapiolani Boulevard, and was not considered in the intersection analysis. The Project Site Plan is illustrated in **Figure 2**.

1.3 STUDY SCOPE AND APPROACH

The following scenarios were evaluated to identify the potential transportation impacts of the Project:

- Existing Conditions;
- Existing plus Project Conditions;
- 2030 Cumulative Conditions; and,
- 2030 Cumulative plus Project Conditions.

The term “Cumulative” herein refers to build-out conditions in year 2030. It should be noted that Cumulative Conditions assumes that the Existing Kakaako Mauka Area Plan adopted in 1982 remains in place and none of the major revisions proposed in the 2007 Kakaako Mauka Area Plan are adopted (i.e. reversal of Piikoi Street / Pensacola Street).



Source: Group 70 International, Inc.

project site plan.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 2

PROJECT SITE PLAN

The following six study intersections were selected for analysis:

1. Kapiolani Boulevard / South Street / King Street (*signalized*);
2. Kapiolani Boulevard / Ward Avenue (*signalized*);
3. Kapiolani Boulevard / Kamakee Street (*signalized*);
4. Kapiolani Boulevard / Pensacola Street (*signalized*);
5. Kapiolani Boulevard / Piikoi Street (*signalized*); and,
6. Kapiolani Boulevard / Outbound Access Driveway (*one-way stop-controlled*).

The locations of the six study intersections surrounding the Project are illustrated in **Figure 3**.

Level of Service (LOS) was analyzed at these six study intersections, which represent locations where the Project could potentially impact operations. All six study intersections were analyzed for the peak hour of the weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak periods.

Data collection—including intersection turning movement counts, lane configuration, parking restrictions, and signal timing information from the Department of Transportation Services of the City and County of Honolulu (DTS)—was conducted by Austin, Tsutsumi, & Associates, Inc. for the *Kakaako Mauka Area Plan Supplemental Environment Impact Statement Transportation Analysis* (Kakaako Mauka Area Plan Analysis).[1] However, the turning movement counts and lane configuration assumed for the Kakaako Mauka Area Plan Analysis do not reflect the effects of coning, which was not in effect at the time the study was being conducted. As a result, updated lane configurations and signal timing information was obtained from DTS, reflecting Existing Conditions as of Year 2010.

The following two roadway segments were selected for analysis:

1. Kapiolani Boulevard between Ward Avenue and Pensacola Street; and,
2. Kapiolani Boulevard between Pensacola Street and Piikoi Street.

Roadway segments only along Kapiolani Boulevard were analyzed, as it is expected that the Project will have the most impact along Kapiolani Boulevard.

[1] Kakaako Mauka Area Plan Supplemental Environment Impact Statement Transportation Analysis (date April 14, 2009). Prepared by AECOM. Prepared for Hawaii Community Development Authority.

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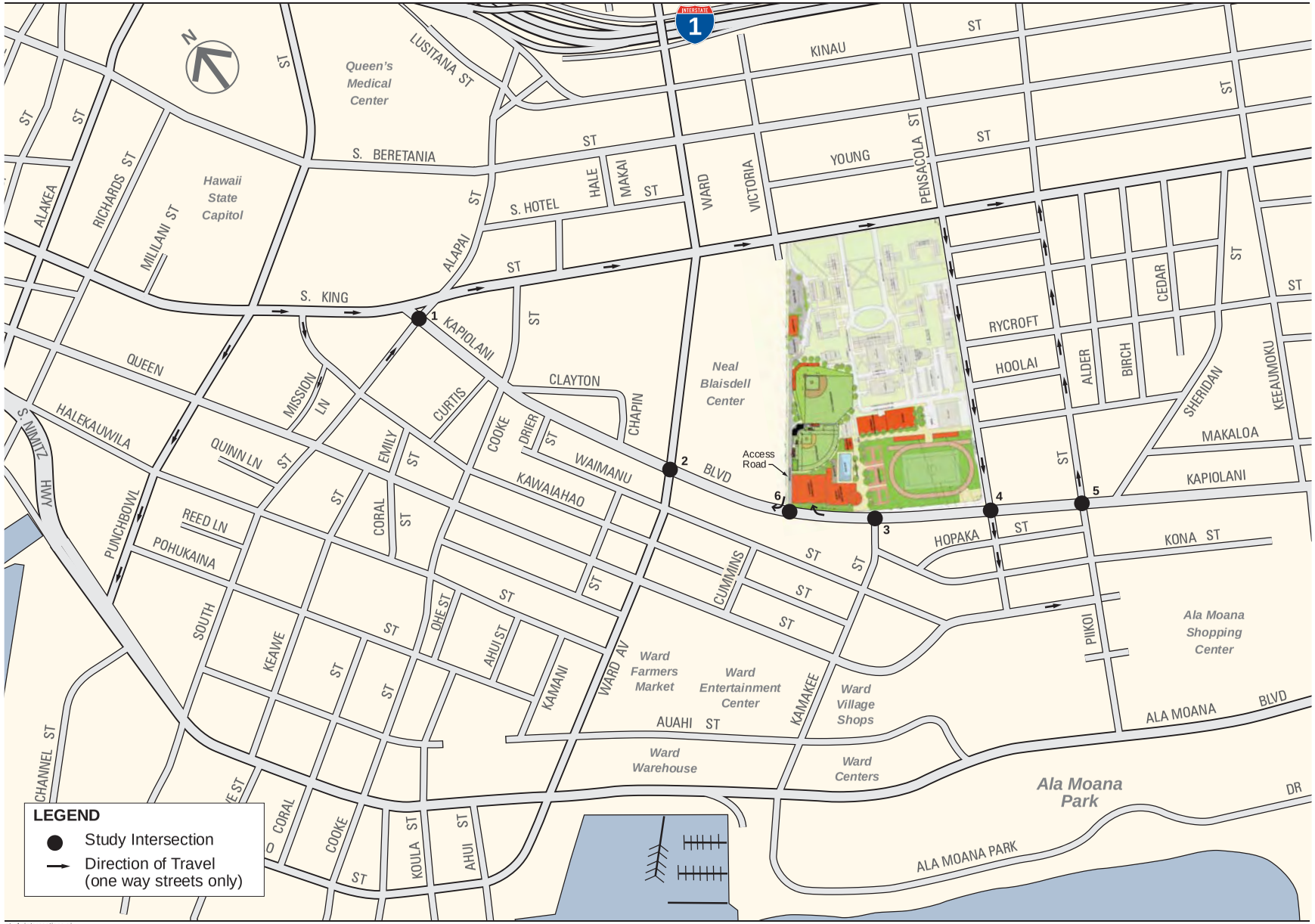

study intersections.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 3

STUDY INTERSECTIONS

2.0 EXISTING CONDITIONS

This chapter provides a description of the existing transportation conditions in the vicinity of the Project. Included in this chapter are descriptions of the existing roadway, transit, pedestrian, and bikeway networks and documentation of the existing traffic, transit, pedestrian, bicycle, site access and circulation, and parking conditions.

2.1 ROADWAY NETWORK

For the purpose of this transportation study, directionality is expressed relative to the compass in place of commonly used directionality in Hawaii: north in place of mauka; south in place of makai; east in place of Diamond Head; and west in place of Ewa. Ala Moana Boulevard, Kapiolani Boulevard, and parallel roadways are assumed to operate in the east-west (Diamond Head-Ewa) orientation; Ward Avenue, Piikoi Street, and parallel roadways are assumed to operate in the north-south (mauka-makai) orientation.

The Project area is served by the following major roadways:

Kapiolani Boulevard is a six-lane east-west arterial, connecting Kakaako in the west with Kahapulu in the east. At South Street, Kapiolani Boulevard consists of three lanes in the eastbound direction and three lanes in the westbound direction. Kapiolani Boulevard merges with South King Street, which provides access to Downtown Honolulu and Interstate 1 at Middle Street. No on-street parking is provided along Kapiolani Boulevard during the weekday AM and PM peak periods. Contra-flow lanes are created through coning in order to accommodate westbound traffic during the weekday AM peak periods and eastbound traffic during the weekday PM peak periods. For the weekday AM peak period, cones are placed at 5:00 AM from Cooke Street to Kaimuki Avenue and removed at 8:30 AM starting from Kaimuki Avenue. For the weekday PM peak period, cones are placed at 3:00 PM from Kalakaua Avenue toward McCully and west of Ward Avenue; the cones are removed at 5:30 AM starting at Ward Avenue going east.

King Street is an east-west, one-way four-lane arterial in the eastbound direction. On-street parking is provided on the north side of King Street between Ward Avenue and Piikoi Street.

Ward Avenue is a four-lane, two-way north-south collector. Left turn pockets are provided at most intersections in Kakaako. On-street parking is provided on both sides of the street, with curb cuts for driveways serving various commercial uses lining the street.

South Street is a north-south collector in Kakaako connecting Ala Moana Boulevard in the south with South King Street—herein referred to collectively as King Street—in the north. South Street operates with three to five lanes in a one-way northbound couplet with Punchbowl Street one block to the west. Between 3:30 PM and 5:30 PM, parking is restricted on both sides of this segment of South Street and it operates with five lanes of traffic.

Piikoi Street is a north-south, two-way arterial between Ala Moana Boulevard and Kapiolani Boulevard, with two to three lanes in the southbound direction and three to four lanes in the northbound direction. No on-street parking is provided during the weekday AM and PM peak periods and traffic is separated by a raised, landscaped median. Piikoi Street becomes one-way north of Kapiolani Boulevard, with four to five lanes in the northbound direction. On-street parking is provided on Piikoi Street north of Kapiolani Boulevard.

Pensacola Street is a north-south arterial operating as a four- to five-lane southbound roadway in a couplet with Piikoi Street, with on-street parking provided during the weekday AM and PM peak periods on the west side of the street.

State Route 92 (SR 92) is a six lane east-west highway running south of the Project. SR 92 provides access to the Project through Piikoi Street, Kamakee Street, and, Ward Avenue. SR 92 east of Bishop Street is known as Ala Moana Boulevard and west of Bishop Street is known as Nimitz Highway.

Interstate 1 (H-1) is a six lane east-west highway running north of the Project. H-1 provides access to the Project through Kinau Street and Punchbowl Street.

2.2 TRAFFIC CONDITIONS

2.2.1 INTERSECTION OPERATIONS

Traffic counts for each of the study intersections were collected on Tuesdays, Wednesdays, and Thursdays in October 2007 for the Kakaako Mauka Area Plan Analysis. These traffic counts were forecasted to 2010 volumes for the analysis using growth factors consistent with the Kakaako Mauka Area Plan Analysis. Vehicles were also rerouted due to westbound left turn restrictions during the PM peak period due to coning along Kapiolani Boulevard, which was not in effect during the time the Kakaako Mauka Area Plan Analysis was conducted.

The intersection analysis uses the 2000 HCM methodology, which is based on Level of Service. The LOS methodology is a qualitative description of the performance of an intersection based on average delay per vehicle. Intersection LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays.

For signalized intersections, the 2000 HCM methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS are then presented for the intersection. For unsignalized intersections, the LOS is based on the average delay (in seconds per vehicle) for all approaches for an all-way stop-controlled intersection or the worst approach for a one- or two-way stop-controlled intersection. Level of Service definitions for signalized and unsignalized intersections are summarized in **Table 1**.

Table 1: Intersection Level of Service Definitions

LOS	Description	Average Delay (sec / veh)	
		Signalized Intersections	Unsignalized Intersections
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	> 10.0 and ≤ 20.0	> 10.0 and ≤ 15.0
C	Average traffic delay	> 20.0 and ≤ 35.0	> 15.0 and ≤ 25.0
D	Long traffic delay	> 35.0 and ≤ 55.0	> 25.0 and ≤ 35.0
E	Very long traffic delay	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	Extreme traffic delay	> 80.0	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.
Notes:
- Delay in seconds per vehicle.
- For signalized intersections, average delay represents the average of all approaches.
- For unsignalized intersections, average delay represents the average of all approaches (all-way stop control) or the worst approach (one- or two-way stop control).

The six study intersections were evaluated using the *2000 Highway Capacity Manual* (HCM) methodology.[2] For signalized intersections, this methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS are presented for the intersection. For one-way stop-controlled (OWSC) intersections, intersection LOS is given as the LOS for the worst intersection approach.

Lane geometries for each intersection are shown in **Figure 4A** and **Figure 4B**. Due to contra-flow coning on Kapiolani Boulevard, the lane geometries for the intersections during the weekday AM peak period are different from the weekday PM peak period. These differences are illustrated in the figures.

(1) As part of the HCM methodology, adjustments are typically made to the capacity of each intersection to account for various factors that reduce the ability of the streets to accommodate vehicles (such as the downtown nature of the area, number of pedestrians, bus stops, vehicle types, lane widths, grades, on-street parking and queues).

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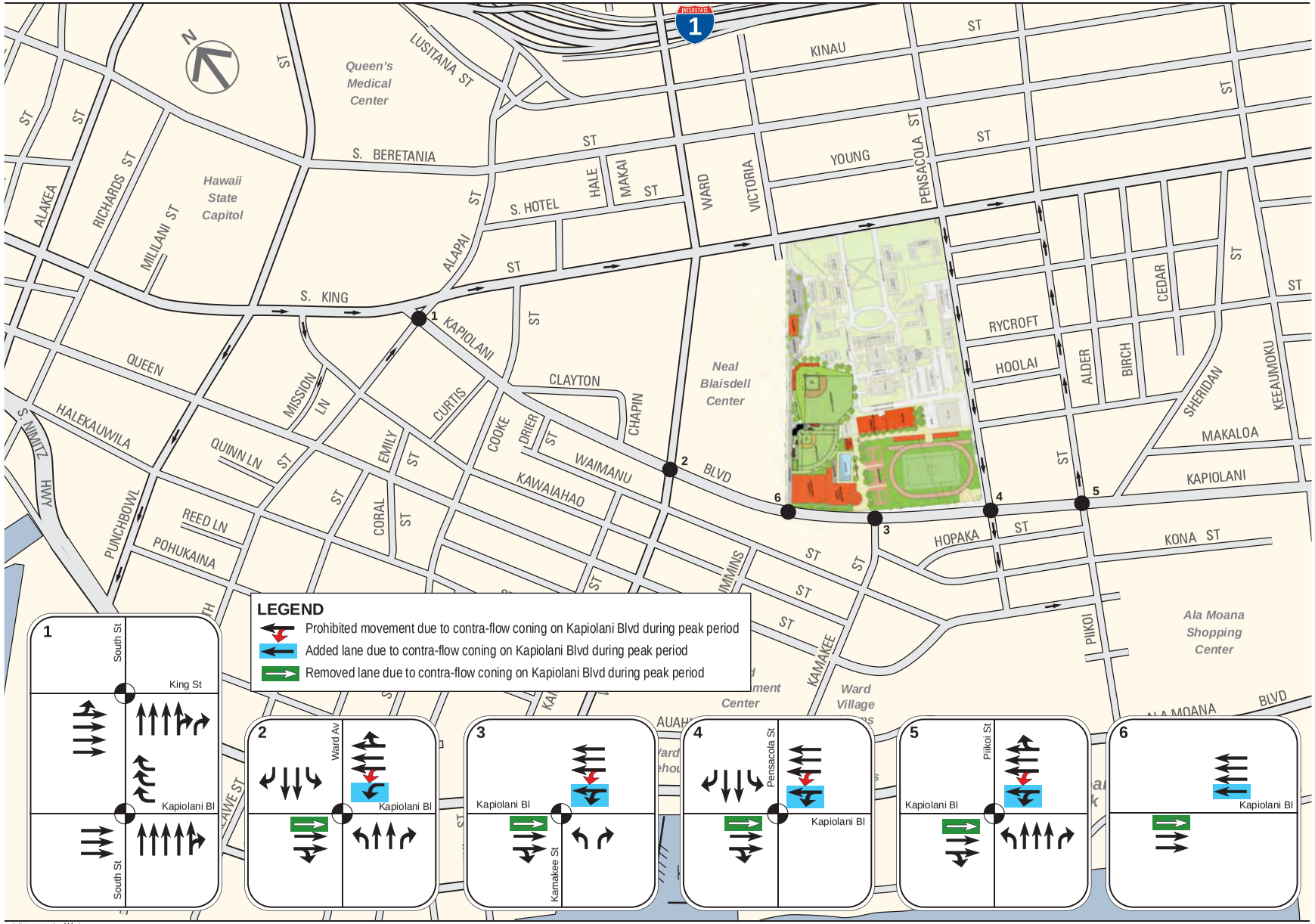

existing geometry AM.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 4A

EXISTING GEOMETRY

Weekday AM Peak Period

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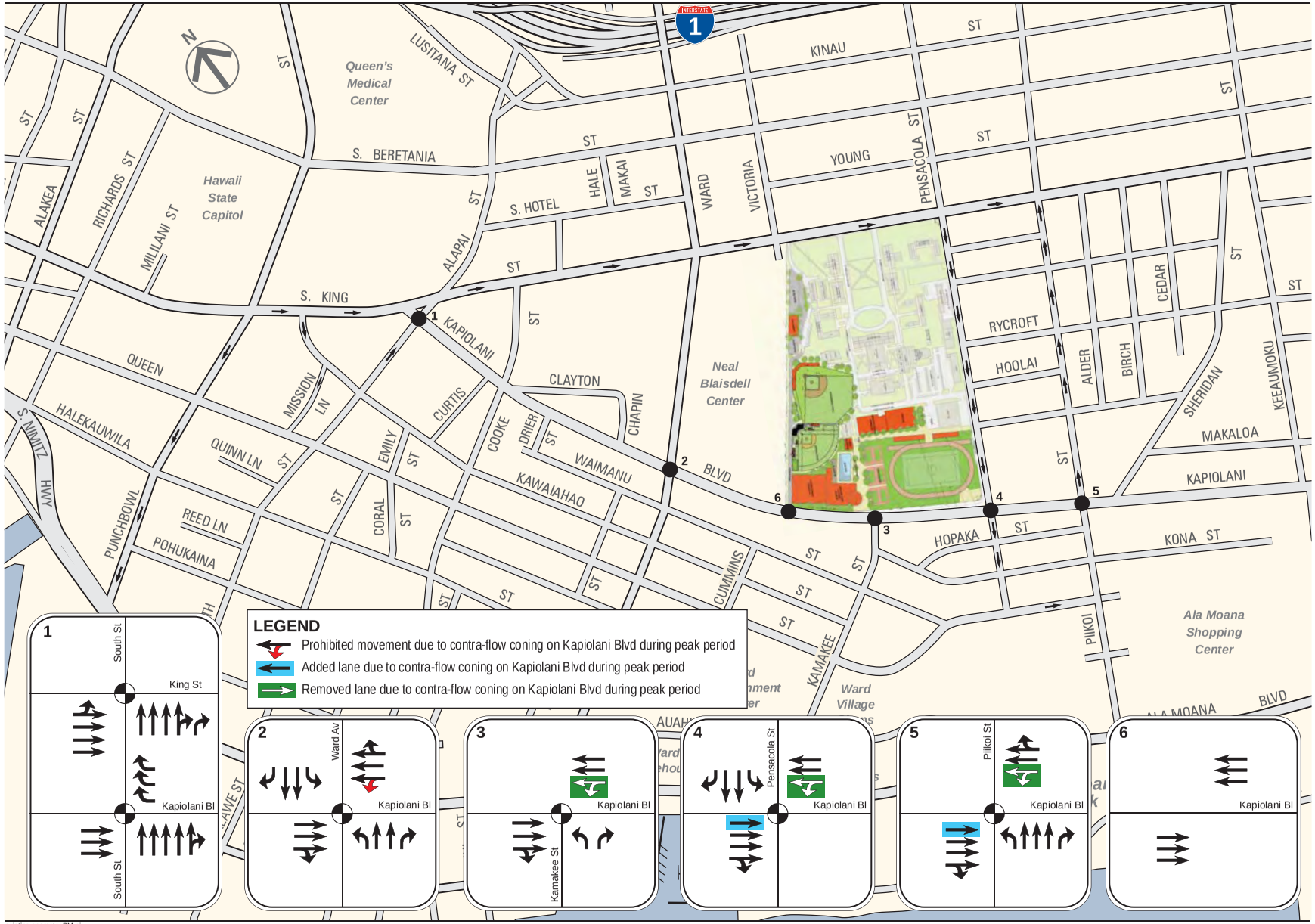

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Figure 4B

EXISTING GEOMETRY

Weekday PM Peak Period

Westbound left-turns along Kapiolani Boulevard are restricted during the weekday PM peak period. Since the traffic counts used in the Kakaako Mauka Area Plan Analysis were conducted in 2007, when Kapiolani Boulevard was not coned due to construction, vehicles were rerouted during the weekday PM peak hour for all scenarios for this analysis. Westbound left vehicles on Kapiolani Boulevard / Piikoi Street, Kapiolani Boulevard / Pensacola Street, and Kapiolani Boulevard / Kamakee Street were rerouted to turn right at Piikoi Street, loop around and return to Kapiolani Boulevard at Pensacola Street heading southbound. Vehicles from southbound Kapiolani Boulevard / Pensacola Street were rerouted to their original destination. Existing Conditions traffic volumes are shown in **Figure 5**.

Existing Conditions intersection LOS is summarized in **Table 2**. Due to limitations in the HCM methodology, delay values over 80.0 seconds are typically considered unreliable. In these cases, the delay is simply given as "greater than 80.0" (>80.0), with the understanding that the intersection is operating poorly. For unsignalized intersections, delay values over 50.0 seconds are considered unreliable and delay is given as "greater than 50.0" (>50.0).

Table 2: Intersection Level of Service—Existing Conditions

Intersection		Control Type	Weekday AM Peak Hour		Weekday PM Peak Hour	
			LOS	Delay[1]	LOS	Delay[1]
1	Kapiolani Blvd. / South St. / King St.	Signal	C	28.9	C	33.5
2	Kapiolani Blvd. / Ward Ave.	Signal	D	38.4	D	46.2
3	Kapiolani Blvd. / Kamakee St.	Signal	A	4.0	A	6.6
4	Kapiolani Blvd. / Pensacola St.	Signal	B	15.0	C	21.5
5	Kapiolani Blvd. / Piikoi St.	Signal	B	18.3	C	21.5
6	Kapiolani Blvd. / Outbound Access Driveway	OWSC	--	--	--	--

Source: AECOM, 2010.
Notes:
- OWSC = One-way stop control
(1) Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis.

All study intersections operate at acceptable LOS under Existing Conditions in both the weekday AM and PM peak hours.

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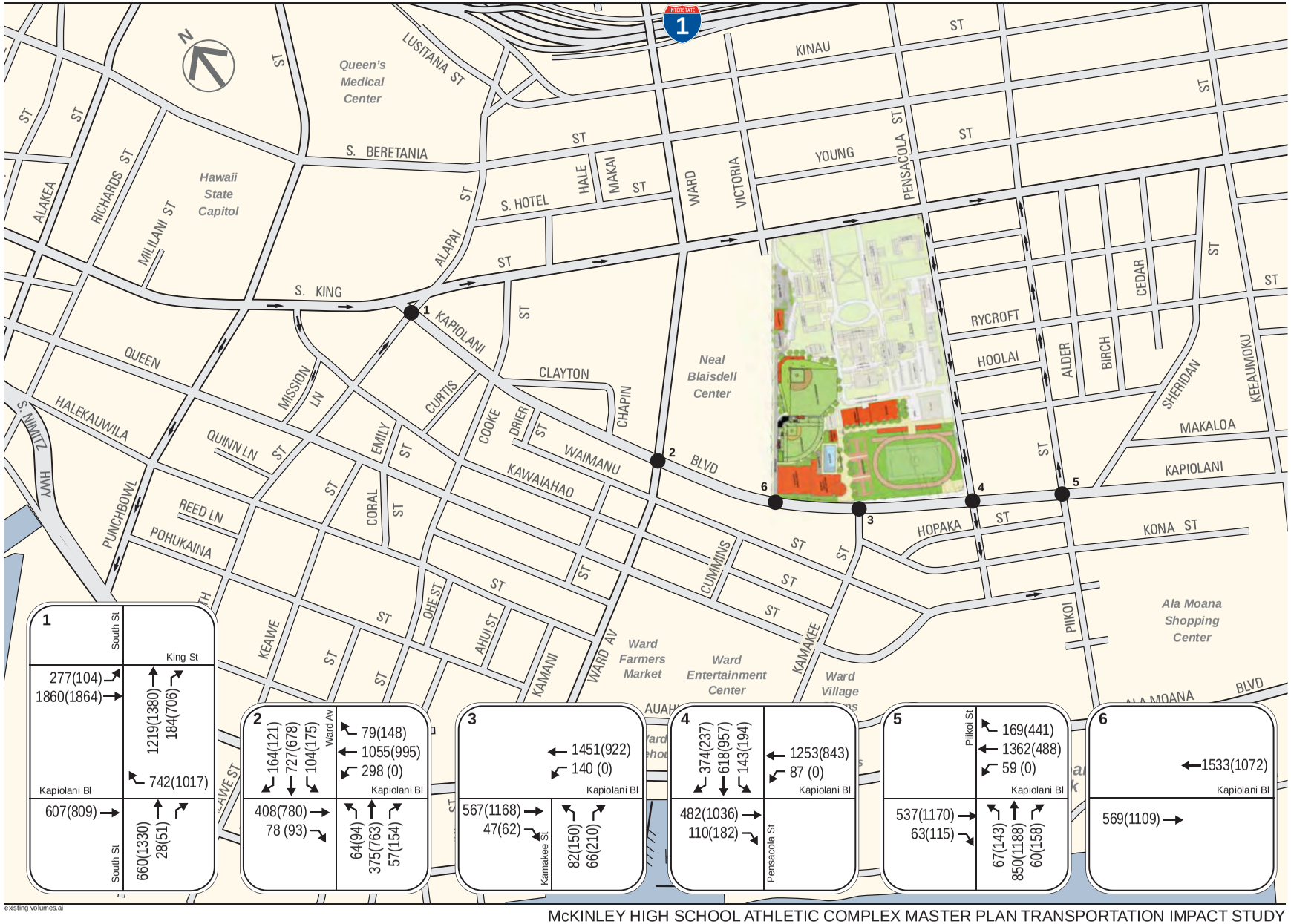

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 5

EXISTING TRAFFIC VOLUMES

Weekday AM (PM) Peak Hour

2.2.2 ROADWAY SEGMENT OPERATIONS

The operation of roadway segments was analyzed using the 2000 HCM arterial LOS methodology, which considers the amount of signal delay and the travel time on each segment of the arterial and calculates a total time required to travel along the arterial. Based on the distance traveled, an average speed is calculated, which is then used to determine the overall LOS based on the type of arterial roadway and its function. Level of Service definitions for roadway segments are summarized in **Table 3**.

Table 3: Roadway Segment Level of Service Definitions

Urban Street Class	I	II	III	IV
Range of free-flow Speed	**55 to 45 mph**	**45 to 35 mph**	**35 to 30 mph**	**30 to 25 mph**
LOS	Average Travel Speed (mph)			
A	> 42	> 35	> 30	> 25
B	> 34-42	> 28-35	> 24-30	> 19-25
C	> 27-34	> 22-28	> 18-24	> 13-19
D	> 21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.
Notes:
- Delay in seconds per vehicle.

For the purpose of this analysis, Class IV definitions were utilized as the free-flow speed along Kapiolani Boulevard is between 30 to 25 mph. The LOS for the selected roadway segments is summarized in **Table 4**.

Table 4: Roadway Segment Level of Service—Existing Conditions

Roadway		Direction	Weekday AM Peak Hour		Weekday PM Peak Hour	
			LOS	Speed[1]	LOS	Speed[1]
1	**Kapiolani Blvd.** between Ward Ave. and Pensacola St.	Eastbound	C	19	C	17
		Westbound	C	17	C	16
2	**Kapiolani Blvd.** between Pensacola St. and Piikoi St.	Eastbound	D	13	D	12
		Westbound	D	13	D	10

Source: AECOM, 2010.
Notes:
(1) Speed presented in miles per hour.

Average speeds near the Project are in the 10 mph to 19 mph range, with the slowest average speeds along Kapiolani Boulevard between Pensacola Street and Piikoi Street during the AM and PM peak hour.

2.3 TRANSIT CONDITIONS

TheBus, operated by Oahu Transit Services (OTS), provides fixed-route public transit and paratransit service in Kakaako, Honolulu, and throughout the island of Oahu. TheBus operates a "hub-and-spoke" network, with the majority of services centralized along major corridors and serving major destinations, such as the Ala Moana Shopping Center or UH Manoa. Within Kakaako, most lines run along major corridors such as King Street, Kapiolani Boulevard, or Ala Moana Boulevard. All buses are equipped with wheelchair lifts and bicycle racks.

TheBus operates Routes 1, 1L, 2, 3, 9, 13, 17, 18, 40, 40A, 52, 53, 62, A, B, and C near the Project. The nearest stops for these routes near the Project are summarized in **Table 5**. Major stops near the Project include: Kamakee Street / Kapiolani Boulevard, Ward Avenue / Kapiolani Boulevard, Pensacola Street / King Street, and, Ward Avenue / King Street. Riders traveling to / from the Project via Route 17 or 18 would utilize the stops located at Pensacola Street / Hoolai Street, Pensacola Street / Elm Street, and Pensacola Street / King Street. Riders traveling to / from the Project via Routes 1, 1L, 2, 13, and B would utilize the stop located at Pensacola Street / King Street. Riders traveling to / from the Project via Routes 3, 9, 40, 40A, 52, 53, 62, A, and C would utilize the stop located at Kamakee Street / Kapiolani Boulevard. All riders would utilize necessary crosswalks and walk to access points along Kapiolani Boulevard, Pensacola Street, or King Street to enter the Project site. Existing transit service in Kakaako in the weekday AM and PM peak periods is illustrated in **Figure 6**.

Table 5: Transit Service—Existing Conditions

Route	Service Area / Destination	Nearest Stops
1	Kalihi / Aala Park to Hawaii Kai	Pensacola Street / King Street Ward Avenue / King Street
1L	Kalihi / Aala Park to Hawaii Kai	Pensacola Street / King Street Ward Avenue / King Street
2	Kalihi and Liliha to Waikiki	Pensacola Street / King Street Ward Avenue / King Street
3	Kamakee Street / Kapiolani	Kamakee Street / Kapiolani Boulevard Ward Avenue / Kapiolani Boulevard
9	Pearl Harbor to Palolo Valley	Kamakee Street / Kapiolani Boulevard Ward Avenue / Kapiolani Boulevard
13	Liliha to Campbell Ave	Pensacola Street / King Street Ward Avenue / King Street
17	Makiki to Ala Moana	Pensacola Street / Hoolai Street Pensacola Street / Elm Street
18	Ala Moana Center to UH	Pensacola Street / Hoolai Street Pensacola Street / Elm Street
40	Makaha to Honolulu	Kamakee Street / Kapiolani Boulevard Ward Avenue / Kapiolani Boulevard
40A	Makaha to Honolulu	Kamakee Street / Kapiolani Boulevard
52	Honolulu to North Shore	Kamakee Street / Kapiolani Boulevard
53	Pacific Palisades to Honolulu	Kamakee Street / Kapiolani Boulevard
62	Wahiawa Heights to Honolulu	Kamakee Street / Kapiolani Boulevard
A	Waipahu to UH	Kamakee Street / Kapiolani Boulevard
B	Kalihi Transit Center to Waikiki	Pensacola Street / King Street Ward Avenue / King Street
C	Makaha to Honolulu	Kamakee Street / Kapiolani Boulevard

Source: AECOM, 2010.

AECOM

Existing Transit.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Source: TheBus, 2008
AECOM, 2008

Figure 6

EXISTING TRANSIT NETWORK

2.3.1 SCREENLINE ANALYSIS

A screenline analysis was conducted for transit service in the Project area based on work conducted for the Kakaako Mauka Area Plan Analysis. A screenline is a theoretical grouping of transit lines that serve an identifiable corridor or area. A screenline analysis is a comparison of ridership and capacity for each screenline, which is the capacity utilization ratio. A screenline analysis also inherently incorporates some sense of travel direction. When lines are grouped together in a screenline, each direction of travel through the screenline is analyzed separately. During the travel demand analysis, it was determined that the peak direction of travel is into Kakaako during the weekday AM peak period and out of Kakaako during the weekday PM peak period. Therefore, these were the directions chosen for the screenline analysis.

The transit analysis assumes three screenlines for Kakaako—west, north, and east—with each line serving the area being assigned to one or more screenlines. The resulting existing transit capacity utilization is summarized in **Table 6**.

Table 6: Transit Capacity Utilization—Existing Conditions

Screenline	Ridership (passengers)	Capacity (passengers)	Capacity Utilization
Weekday AM Peak Hour – Inbound			
West	4,938	10,500	47%
East	3,135	6,720	47%
North	374	480	78%
Total	**8,447**	**17,700**	**48%**
Weekday PM Peak Hour – Outbound			
West	4,949	10,590	47%
East	3,106	6,300	49%
North	469	660	71%
Total	**8,524**	**17,550**	**49%**

Source: DTS, City and County of Honolulu; AECOM, 2010.

All three screenlines operate under capacity, with higher utilization on buses serving the north screenline. Lines grouped under the west screenline carry the majority of trips into and out of Kakaako.

It should be noted that capacity utilization standards generally vary from one transit operator to another and from one mode to another. For example, it is generally more acceptable for a high-capacity transit system with frequent stops such as a subway or metro to operate at a higher capacity utilization than a bus line serving two distant destinations, as passengers would typically not be expected to stand for long periods of time. Since capacity calculations have already included standees, a capacity utilization in the 80 to 90 percent range would be considered a typical threshold for lines serving urban areas such as Kakaako.[3]

2.4 PEDESTRIAN CONDITIONS

Sidewalks are currently provided on both sides of Kapiolani Boulevard, Pensacola Street, and South King Street. All sidewalks are in generally adequate condition. In assessing pedestrian sidewalk conditions, the effective sidewalk width is generally considered a key factor. The effective sidewalk width represents the width between the building face and the curb, omitting space occupied by obstructions such as landscaping, fire hydrants, bus shelters, or utility poles. For the purposes of this study, existing sidewalk is defined as either obstructed (effective width less than four feet) or unobstructed (effective width greater than or equal to four feet). The effective width along the Project site is approximately slightly greater than four feet on Kapiolani Boulevard, approximately five feet on Pensacola Street, and slightly less than four feet on King Street. Pedestrian activity near the Project is generally moderate throughout the weekdays.

Crosswalks are provided at most signalized and unsignalized intersections to the north, south, and east of the Project. Signalized pedestrian crosswalks, with a width of ten feet, are provided at the Kapiolani Boulevard / Kamakee Street, King Street / Pensacola Street, and Kapiolani Boulevard / Pensacola Street intersections. A signalized midblock crossing, with a width of twenty-five feet, is provided on King Street between Victoria Street and Pensacola Street. Unsignalized crosswalks are provided along Pensacola Street at the intersection of local streets. Existing sidewalk and crosswalk facilities are illustrated in **Figure 7**.

Transit riders accessing the Project site would walk from the stop to the access locations along Kapiolani Boulevard, Pensacola Street and King Street in order to enter the Project. Three transit stops are located along Pensacola Street, one along Kapiolani Boulevard, and, two stops along King Street. Riders getting off at the Pensacola Street stops would not need to cross the street to access the Project. Riders getting off at the Kapiolani Boulevard location would cross the street using the crosswalk provided at Kamakee Street / Kapiolani Boulevard, walk east toward Pensacola Street, turn left on Pensacola Street, and enter through the access locations.

[3] Email communication with Peter Straus, Service Planning Manager, San Francisco Municipal Transportation Agency (SFMTA).

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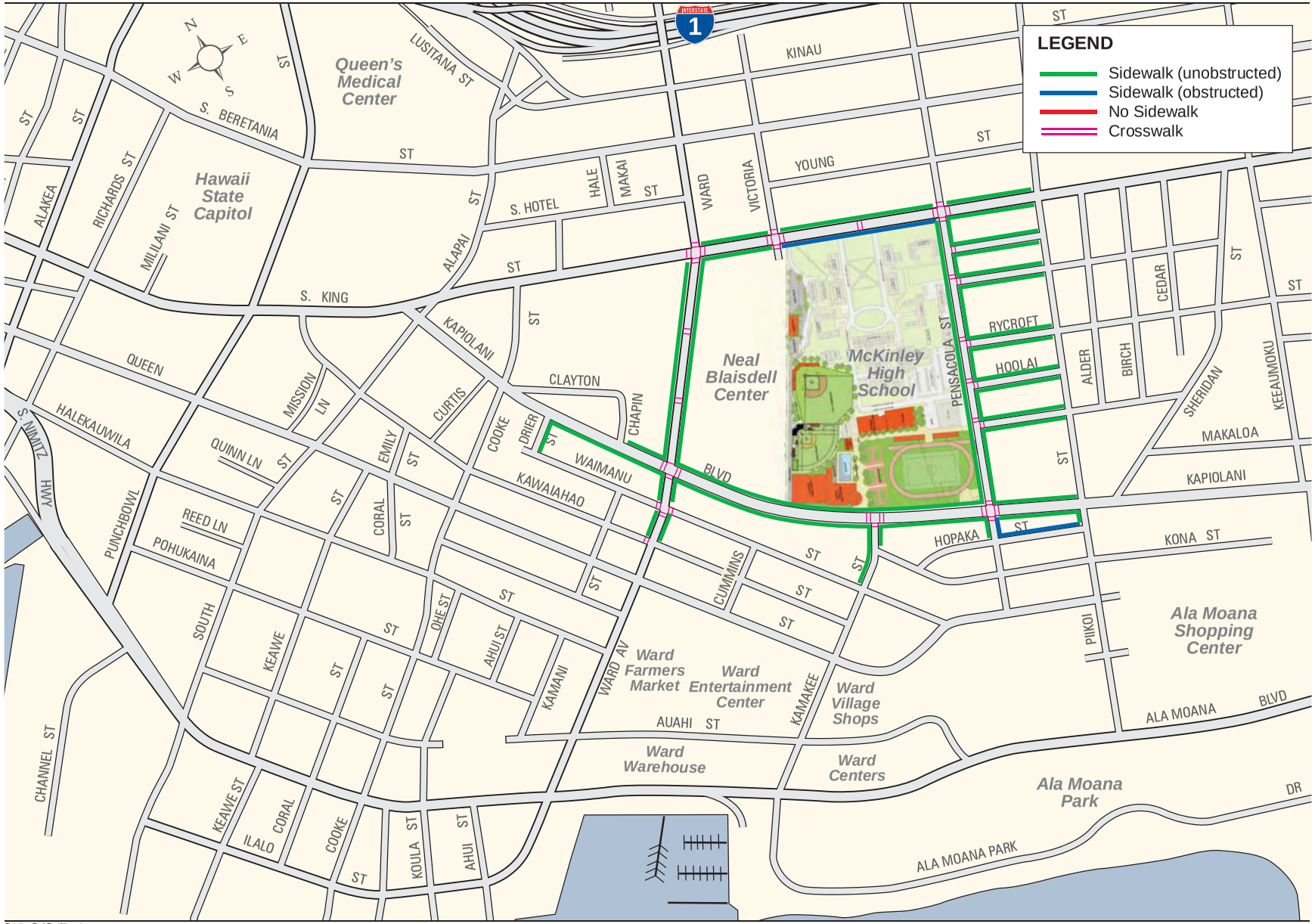


Existing Ped Facilities.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Source: Austin, Tsutsumi & Associates, Inc., 2008;
AECOM, 2008

Figure 7

EXISTING PEDESTRIAN FACILITIES

2.5 BICYCLE CONDITIONS

The existing bicycle network contains Class I and Class III bikeways; there are no Class II bikeways in the Project area. North of the Project, there are Class III bikeways along South Hotel Street and Young Street. The bikeway along South Hotel Street runs between Alapai Street and Ward Avenue. The bikeway along Young Street extends east from Victoria Street. Bicycle activity near the Project is generally low throughout the weekdays.

In addition to the above bikeways, several Class II bikeways are proposed near the Project along major streets, including King Street, Ward Avenue, Piikoi Street, and Pensacola Street. The existing and proposed bicycle facilities near the Project are illustrated in **Figure 8**. The proposed facilities represent a combination of the bikeway plan presented in the Hawaii Department of Transportation (HDOT) Bike Plan Hawaii 2003 and the bikeway plan presented in the 2005 Final Environment Assessment (FEA) for the Makai Area Plan Amendment prepared by Wilson Okamoto Corporation.

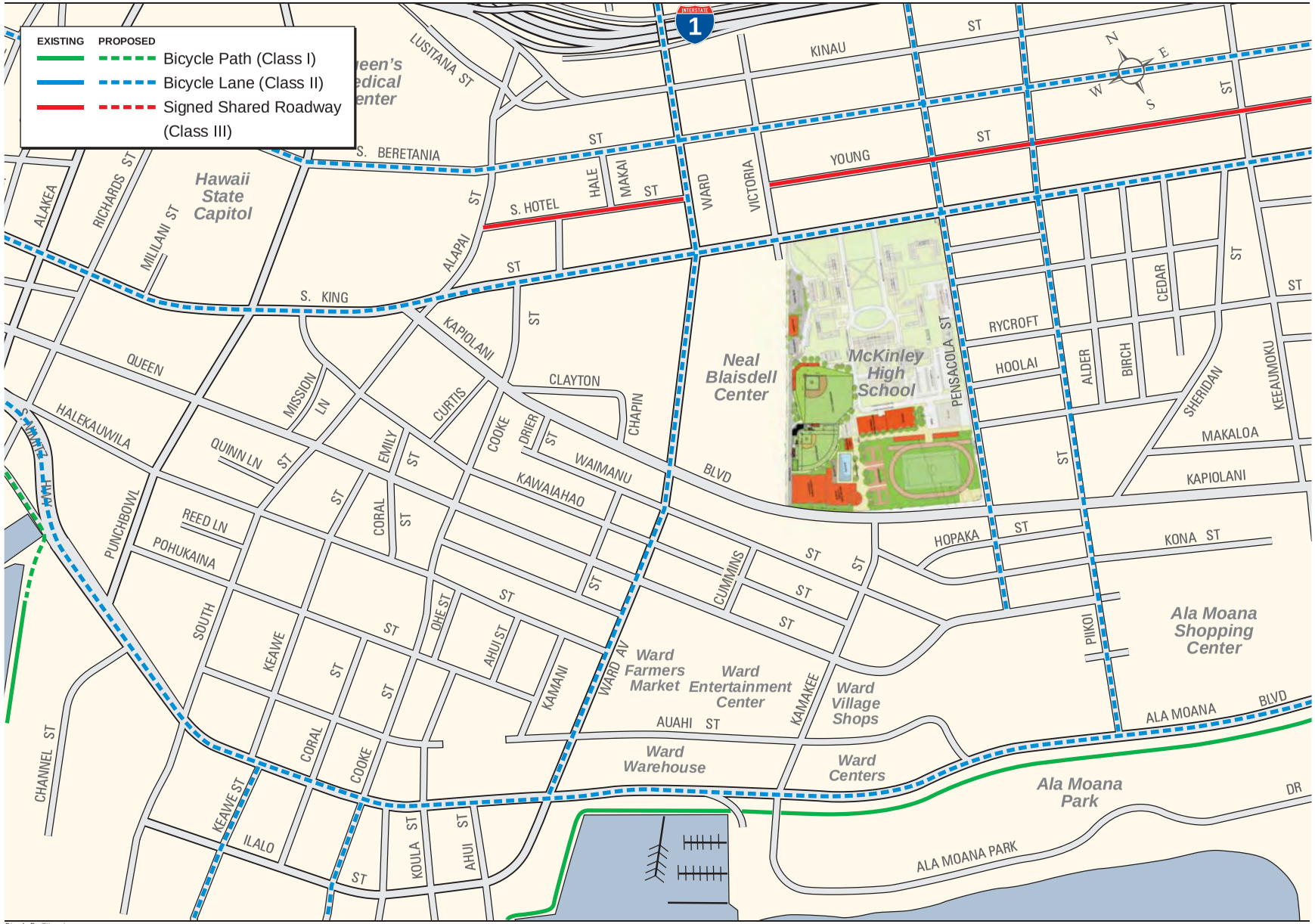
It should be noted that the proposed bikeway plan from the Existing Kakaako Mauka Area Plan does not necessarily agree with the proposed bikeway plan presented in the most recent update to *Bike Plan Hawaii 2003*. The City and County of Honolulu Department of Transportation Services' *Honolulu Bicycle Master Plan* (1999) is mostly in agreement with *Bike Plan Hawaii 2003*, but it also proposes a bikeway on Cooke Street. The *Honolulu Bicycle Master Plan* classifies the bikeways proposed for Cooke Street, Ala Moana Boulevard, Piikoi Street, and Pensacola Street as Priority 2 projects. For the purposes of this study, the more recent state bicycle plan is assumed to have precedence and was thus chosen for inclusion in the evaluation of bicycle operations.

2.6 PARKING CONDITIONS

The Project site currently provides 281 parking spaces, including 12 accessible spaces. There are three parking lots within the site: one main parking lot with 115 spaces near the Mulit-Purpose Classroom Building; a small parking lot with 35 spaces near the Auditorium and Cafeteria; and a small parking lot with 28 spaces near the DOE Main Shop Building. The remainder of the spaces are provided along the curb of access roads within the Project. In addition to the 281 parking spaces, there is also a small parking lot with 72 parking spaces near the Adult Education building along Pensacola Street. The campus configuration and location of buildings are illustrated in the site plan in **Figure 2**.

On-street parking is prohibited during the weekday AM and PM peak periods on both sides of Kapiolani Boulevard bordering the Project. Unrestricted parking is provided on both sides of Pensacola Street bordering the Project. On-street parking on the south side of King Street is prohibited during weekday AM and PM peak hours and parking is prohibited on the north side only during weekday PM peak hours. On-street parking regulation along roadways near the Project is illustrated in **Figure 9**.

AECOM



Bicycle Facilities.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Source: HDOT, 2003
Wilson, Okamoto Corporation, 2005

Figure 8

EXISTING AND PROPOSED BICYCLE FACILITIES

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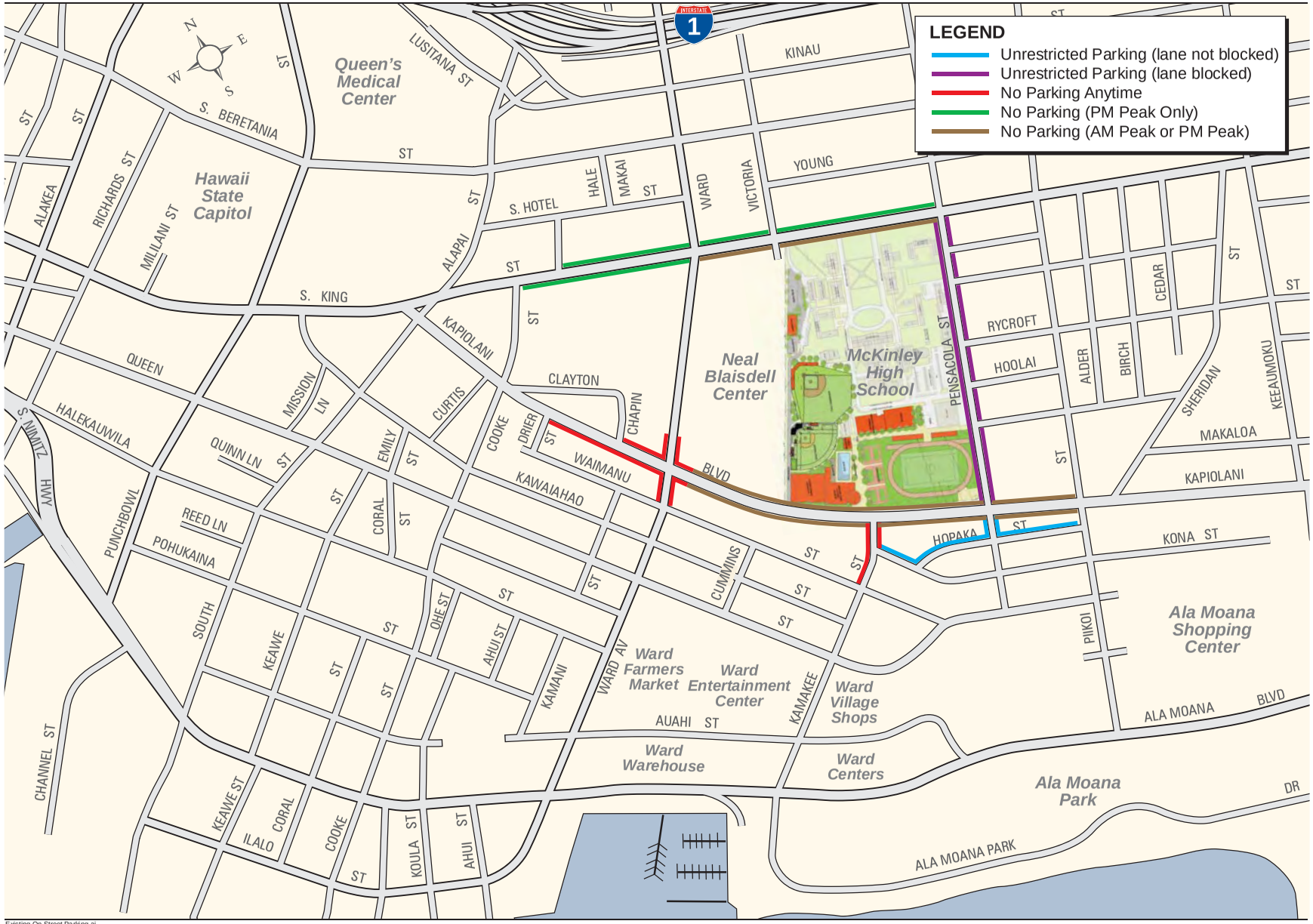

Existing On Street Parking.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Source: Austin, Tsutsumi & Associates, Inc., 2008; AECOM, 2008

Figure 9

EXISTING ON-STREET PARKING CONDITIONS

2.7 SITE ACCESS AND CIRCULATION

Currently, there are four access driveways off of Pensacola Street, three access roads off of King Street, and one driveway along Kapiolani Boulevard, which is currently under construction. Two access driveways are adjacent to the Adult Education parking lot and two access driveways are adjacent to the DOE Main Shop parking lot, which is primarily not for public use. Pedestrians can access the site from sidewalks provided along the access roads on King Street and the driveways on Pensacola Street. The access locations are illustrated in the site plan in **Figure 2**. Internal roadways within the Project site provide access from one end of the Project to the other.

3.0 PROJECT TRAVEL DEMAND

Travel demand refers to the new vehicle, transit, pedestrian, and other trips that would be generated by the Project. This chapter provides an estimate of the travel demand that would be generated by the Project including parking demand.

3.1 METHODOLOGY

3.1.1 TRIP GENERATION

Travel demand refers to the new vehicle, transit, bicycle, pedestrian, and other traffic that would be generated by Project. Travel demand estimates were primarily based on information contained in the Institute of Transportation Engineers' (ITE) *Trip Generation (Eighth Edition)*, with reductions taken to account for internal, linked, and pass-by trips. Linked trips are trips which occur in series en route to a primary destination, such as stopping by the YMCA wellness facility on the way home from work. Pass-by trips are existing vehicle trips that deviate from the primary route to make a stop, such as drivers who already use Kapiolani Boulevard who decide to stop at the new YMCA wellness facility.

3.1.2 MODE SPLIT

Trip generation rates for the proposed land uses were taken from ITE's *Trip Generation (Eighth Edition)* and combined with average vehicle occupancy (AVO) data for home-based work (HBW) trips from the Oahu Metropolitan Planning Organization (OMPO) travel demand forecast model to obtain total person-trips (each individual making one trip counts as a "person-trip"). The AVO for vehicle trips was the result of a Household Interview Survey that provides correlation between Journey to Work (JTW) vehicle trips and the number of persons occupying each vehicle making such trips. Mode split data is consistent with the Kakaako Mauka Area Plan Analysis, which used mode shares obtained from the year 2000 U.S. Census Journey to Work survey for Kakaako. The vehicle occupancy data used to derive the resulting AVO for JTW HBW trips is presented in **Table 7**. This mode split was then used to distribute person-trips across the various travel modes—auto, transit, bicycle, and walk.

Table 7: OMPO Model Average Vehicle Occupancy

Vehicle Occupancy			Total Vehicles	Total Persons	AVO
SOV	HOV 2	HOV 3+			
3,835	878	188	4,901	6,155	1.26

Source: Household Classification Survey, OMPO – 1995; OMPO Travel Demand Forecast Model – December 2002; AECOM– 2008.
Notes:
- AVO = Average Vehicle Occupancy
- SOV = Single-Occupancy Vehicle (driver only)
- HOV 2 = High-Occupancy Vehicle with 2 persons (1 driver, 1 passenger)
- HOV 3+ = High-Occupancy Vehicles with 3 or more persons (1 driver, 2+ passengers)

Although the Kakaako Mauka Area Plan Analysis provides slightly different mode splits for Existing Conditions and for 2030 Cumulative Conditions, the mode split for Existing Conditions has a greater share for auto, and thus was used in the analysis of Existing plus Project Conditions and 2030 Cumulative plus Project Conditions. The mode split data is presented in **Table 8**.

Table 8: Trip Mode Split

Location	Auto	Transit	Bicycle	Walk	Total
Kakaako	79.9%	11.9%	1.2%	7.0%	100.0 %

Source: 2000 U.S. Census Journey to Work; OMPO Travel Demand Forecast Model – December 2002; AECOM– 2008.

3.1.3 TRIP DISTRIBUTION / ASSIGNMENT

The trip distribution is consistent with the Kakaako Mauka Area Plan Analysis, which uses a trip distribution derived from OMPO travel demand forecast model traffic volumes.

3.1.4 PARKING DEMAND

The parking demand for the Project is determined for the weekday peak period based on ITE's *Parking Generation (Third Edition).* Parking demand estimates from the ITE's *Parking Generation (Third Edition)* are based on a sample of parking studies at sites across the United States, for each land use provided. An average parking demand rate is then calculated, which can be used to estimate parking demand generated by land use. In cases where the sample is of sufficient size, a regression analysis is also conducted to derive a linear or logarithmic equation that relates land use size to parking demand.

3.2 PROJECT TRAVEL DEMAND

3.2.1 TRIP GENERATION

ITE's *Trip Generation (Eighth Edition)* provides vehicle trip generation rates for typical land uses. Since the Project involves upgrades and additions to existing school facilities, there is no associated increase in student body or faculty / staff size, the improvements are assumed to have a one-to-one ratio of trips; thus, the Project does not generate any additional Project trips from the improvements. The only new land use that is being added to the Project site is the YMCA wellness facility that will generate Project trips according to the ITE's *Trip Generation*. For conservative purposes, trip generation for an athletic club has been utilized.

The trip generation for the new uses proposed for the Project is included in **Table 9**. As discussed previously, the YMCA wellness facility is the only new proposed use for the Project.

Table 9: Trip Generation—Proposed New Use Person-Trips

Land Use	Size	Person-Trips						
		Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Athletic Club[(1)]	46,000 sf	1,978	84	53	137	178	108	286

Source: *ITE Trip Generation, Eighth Edition*; AECOM, 2010.
Notes:
(1) ITE Land Use Code 493 — Athletic Club
Daily Equation: T = 43.00(X), where X = 1,000 sf
AM Peak Hour Equation: T = 2.97(X), where X = 1,000 sf; 61% in / 39% out
PM Peak Hour Equation: T = 6.58(X)-17.51, where X = 1,000 sf; 62% in / 38% out

The YMCA wellness facility can be considered as a health / fitness club or an athletic club land use according to the ITE's *Trip Generation (Eighth Edition)*, both of which have different trip generation. The health / fitness club generates fewer trips than an athletic club of the same size in both the weekday AM and PM peak hours. The trips generated from a 46,000 square foot health / fitness club are approximately 45 percent of the trips generated from a 46,000 square foot athletic club in the weekday AM peak hour and 55 percent in the weekday PM peak hour. For a conservative approach, the athletic club land use was utilized in the analysis. However, even assuming a reduction of 50 percent in both the weekday AM and PM peak hour for internal, linked, and pass-by trips, the trip generation for the athletic club (with trip reduction) with would still be greater than for the health / fitness club with no reduction. The internal, linked, and pass-by trips are included in **Table 10**.

Table 10: Trip Generation—Internal, Linked, and Pass-by Person-Trips

Land Use	Size	Person-Trips						
		Daily	Weekday AM Peak Hour[1]			Weekday PM Peak Hour[1]		
			In	Out	Total	In	Out	Total
Athletic Club	46,000 sf	989	42	27	69	89	54	143

Source: *ITE Trip Generation, Eighth Edition*; AECOM, 2010.
Notes:
(1) 50 percent of new trips are assumed to be internal, linked, or pass-by trips during the weekday AM and PM peak hour.

With the reduction of internal, linked, and pass-by trips using an athletic club trip generation results in net new trips similar to a health / fitness club trip generation of the same size. The net new trips resulting from the Project are included in **Table 11**.

Table 11: Trip Generation—Net New Person-Trips

Trips	Person-Trips						
	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
New Trips	1,978	84	54	138	178	108	286
Internal, Linked, and Pass-by Trips	-989	-42	-27	-69	-89	-54	-143
Net-new Trips	989	42	27	69	89	54	143

Source: *ITE Trip Generation, Eighth Edition*; AECOM, 2010.

3.2.2 MODE SPLIT

Person-trips are distributed to the various modes of travel. The resulting trips by mode and vehicle-trips for the weekday AM and PM peak hours are summarized in **Table 12**. It should be noted that there is a distinction between auto person-trips and vehicle-trips—the auto person-trips refers to the number of people using a vehicle for their trip either as driver or passenger, while the vehicle-trips refers to the number of vehicles actually being used for trip-making.

Table 12: Trip Generation—Net New Person-Trips (by Mode)

Peak Hour	Total Person-Trips					Vehicle-Trips[2]
	Auto[1]	Transit	Bicycle	Pedestrian	Total	
Weekday AM Peak Hour						
Inbound	34	5	1	2	42	26
Outbound	21	3	0	3	27	17
Total	**55**	**8**	**1**	**5**	**69**	**43**
Weekday PM Peak Hour						
Inbound	70	10	1	8	89	56
Outbound	44	7	1	2	54	34
Total	**114**	**17**	**2**	**10**	**143**	**90**

Source: AECOM, 2010.
Notes:
(1) Auto person-trips refers to the number of people using a vehicle for their trip, whether they are driver or passenger.
(2) Vehicle-trips refers to the number of actual vehicles being used for trip-making.

3.2.3 PARKING DEMAND

The weekday peak period estimated parking demand for the Project according to the ITE's *Parking Generation (Third Edition)* is included in **Table 13**.

Table 13: Project Parking Demand

Land Use	Size	Parking Spaces	
		Demand	Supply
Athletic Club[1]	46,000 sf	163	340
Total		**163**	**340**

Source: *ITE Parking Generation, Third Edition*; AECOM, 2010.
Notes:
(1) ITE Land Use Code 493 — Athletic Club
Peak Period Equation: T = 3.55(X), where X = 1,000 sf

Since there is no associated increase to the student body or faculty / staff size from the Project improvements, no additional school parking is needed. However, additional parking is required due to the new land use (YMCA wellness facility). The Project provides 340 new parking spaces in a three-story parking structure adjacent to the YMCA wellness facility, which exceeds the estimated demand for the Project. Therefore, a spillover into on-street parking in the surrounding area is not expected.

3.2.4 TRIP DISTRIBUTION

The person-trips by the various modes are then distributed to each of six destination areas:

- To Ewa and the west (via surface streets): 25 percent;
- To Diamond Head and the east (via surface streets): 22 percent;
- To Ewa and the west (via H-1): 19 percent;
- To Diamond Head and the east (via H-1): 24 percent;
- To the north: 3 percent; and,
- Within Kakaako: 7 percent.

Trip distribution for the person-trips generated by the Project is illustrated in **Figure 10**.

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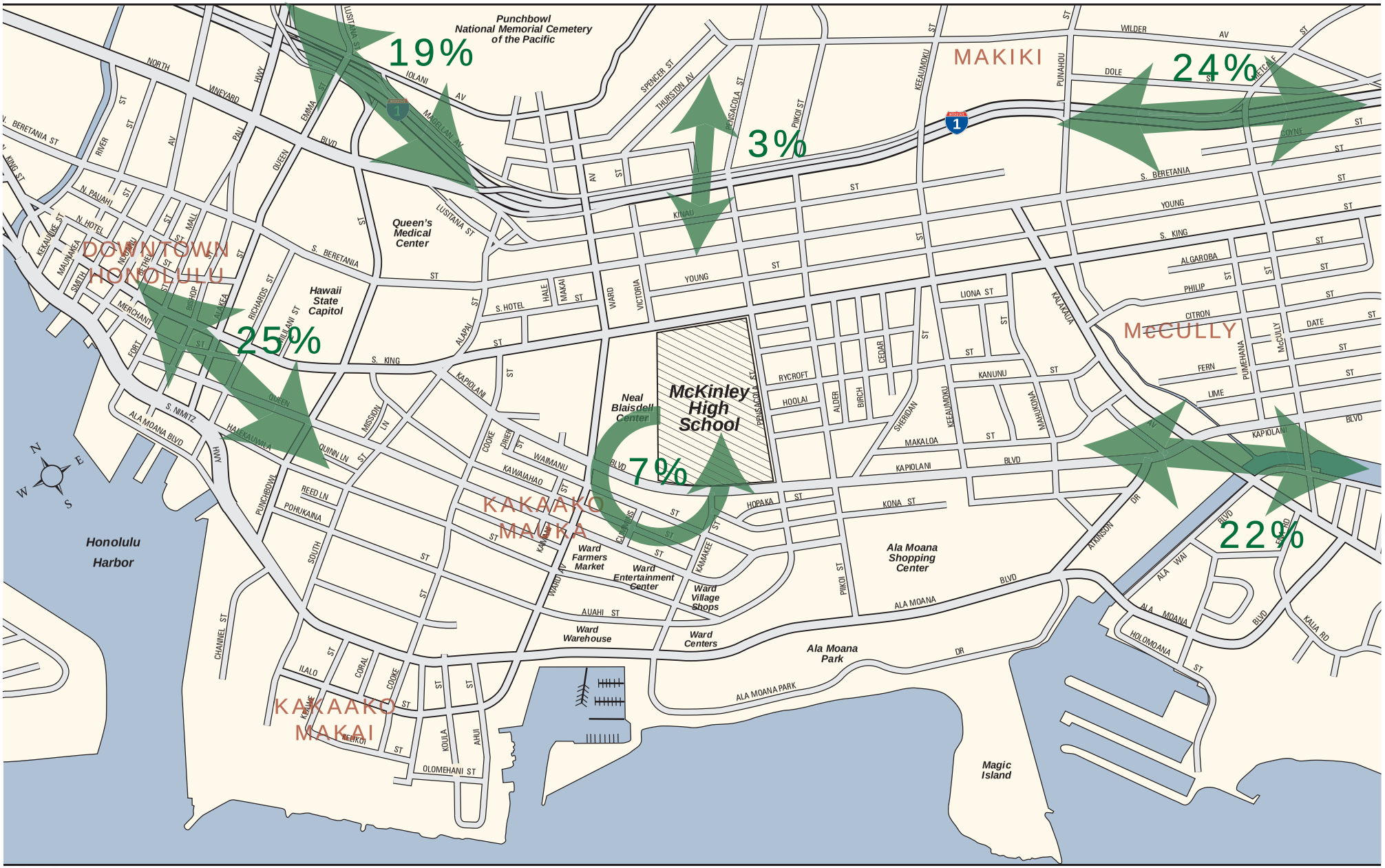

Trip Distribution.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Source: AECOM, 2008

Figure 10

TRIP DISTRIBUTION

4.0 IMPACT ANALYSIS

This section discusses the impacts of the Project to Existing Conditions and Cumulative Conditions. Analyses were conducted to determine the Project's potential impacts to traffic facilities, transit facilities, pedestrian facilities, and bicycle facilities. Project site access and circulation and parking were also evaluated.

4.1 EXISTING PLUS PROJECT CONDITIONS

The following presents the transportation operations and potential impacts under the Existing plus Project Conditions at the six study intersections.

4.1.1 TRAFFIC IMPACTS

Existing plus Project Conditions volumes are shown in **Figure 11**. Existing plus Project Conditions intersection LOS is summarized in **Table 14**. The detailed LOS calculations are included in **Appendix C**.

Table 14: Intersection Level of Service—Existing plus Project Conditions

Intersection		Peak Hour	Existing Conditions		Existing plus Project Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	Kapiolani Blvd. / South St. / King St.	AM	C	28.9	C	28.9
		PM	C	33.5	C	33.5
2	Kapiolani Blvd. / Ward Ave.	AM	D	38.4	D	38.5
		PM	D	46.2	D	46.2
3	Kapiolani Blvd. / Kamakee St.	AM	A	4.0	A	4.2
		PM	A	6.6	A	6.9
4	Kapiolani Blvd. / Pensacola St.	AM	B	15.0	B	15.0
		PM	C	21.5	C	21.5
5	Kapiolani Blvd. / Piikoi St.	AM	B	18.3	B	18.3
		PM	C	21.5	C	21.5
6	Kapiolani Blvd. / Outbound Access Driveway	AM	--	--	B	11.2
		PM	--	--	B	13.7

Source: AECOM, 2010.
Notes:
[1] Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis. For unsignalized intersections average delays beyond 50 seconds are shown as ">50.0" because delays above this threshold are beyond the meaningful range of the analysis.

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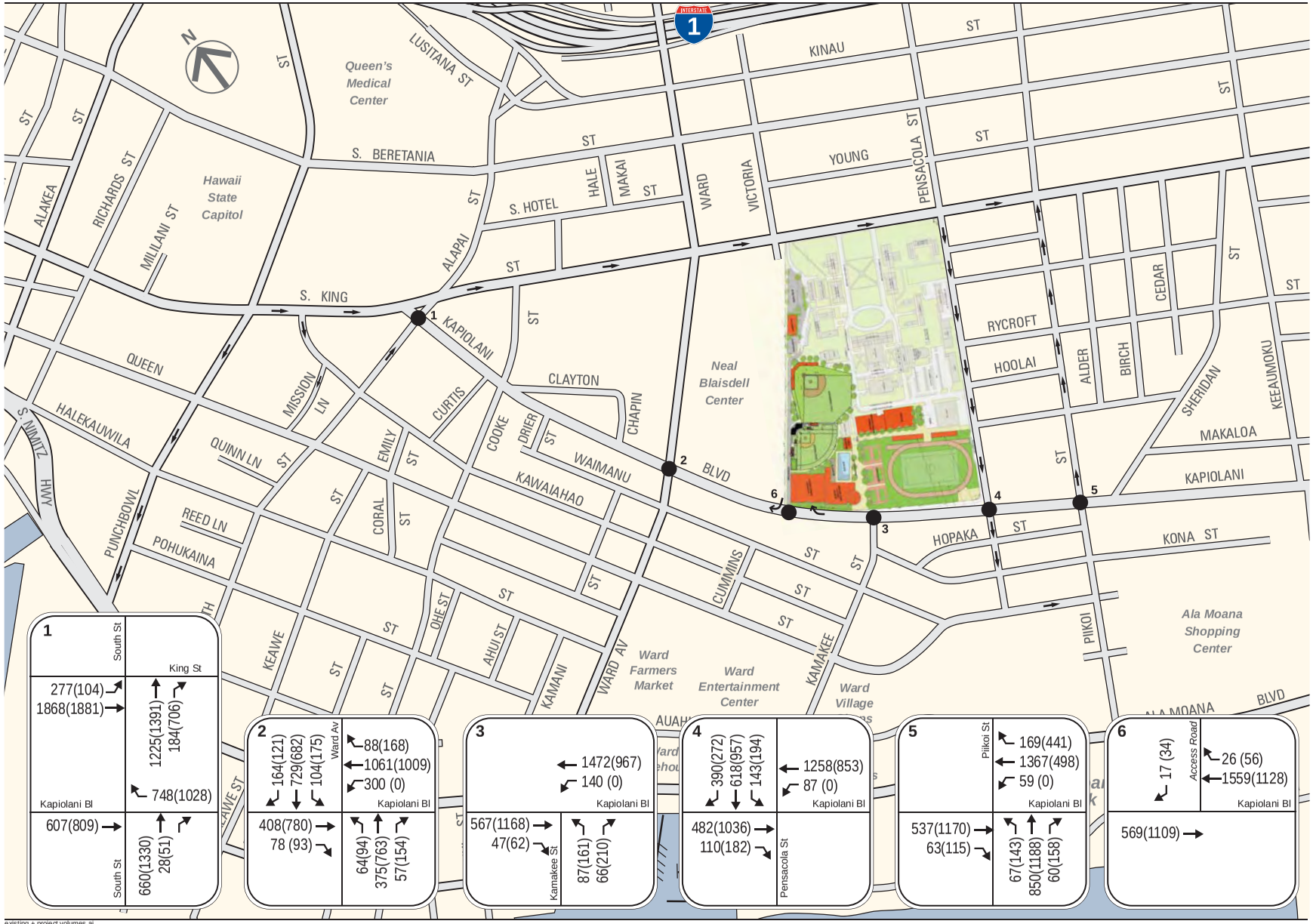


existing + project volumes.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 11

EXISTING PLUS PROJECT TRAFFIC VOLUMES

Weekday AM (PM) Peak Hour

All study intersections would operate at acceptable levels of LOS under Existing plus Project Conditions in both the weekday AM and PM peak hours.

The LOS for the selected roadway segments is summarized in **Table 15**.

Table 15: Roadway Segment Level of Service—Existing plus Project Conditions

Intersection		Direction	Peak Hour	Existing Conditions		Existing plus Project Conditions	
				LOS	Speed[1]	LOS	Speed[1]
1	**Kapiolani Blvd.** between Ward Ave. and Pensacola St.	Eastbound	AM	C	19	C	19
			PM	C	17	C	17
		Westbound	AM	C	17	C	17
			PM	C	16	C	16
2	**Kapiolani Blvd.** between Pensacola St. and Piikoi St.	Eastbound	AM	D	13	D	13
			PM	D	12	D	12
		Westbound	AM	D	13	D	12
			PM	D	10	D	10

Source: AECOM, 2010.
Notes:
(1) Speed presented in seconds per vehicle.

Average speeds near the Project are in the 10 mph to 19 mph range, with the slowest average speeds along Kapiolani Boulevard between Pensacola Street and Piikoi Street during the weekday AM and PM peak hour.

Project trips would be added to the state highway facilities including H-1 and SR 92. During the weekday AM peak hour 14 vehicles would be added on H-1 (7 westbound, 7 eastbound) and 6 vehicles would be added on SR 92 (3 westbound, 3 eastbound). During the weekday PM peak hour 30 vehicles would be added on H-1 (15 westbound, 15 eastbound) and 9 vehicles would be added on SR 92 (5 westbound, 4 eastbound). The share added to the state highway facilities H-1 and SR 92 is relatively low compared to the existing traffic on these facilities. Thus, the project-generated trips are not expected to have an impact on state highway facilities and further analysis were determined to be unnecessary.

4.1.2 TRANSIT IMPACTS

The Project can be accessed through TheBus Routes 1, 1L, 2, 3, 9, 13, 17, 18, 40, 40A, 52, 53, 62, A, B, and C. The Project is expected to generate eight transit trips in the weekday AM peak hour and 17 transit trips in the weekday PM peak hour. This level of Project-generated transit ridership is not expected to result in a significant impact to transit ridership and capacity.

The Existing plus Project screenline capacity utilization is summarized in **Table 16**. The detailed capacity utilization calculations are included in **Appendix D**.

Table 16: Transit Capacity Utilization—Existing plus Project Conditions

Screenline	Existing Conditions			Existing plus Project Conditions			
	Rid.	Cap.	Util.	Rid.		Cap.	Util.
				Proj.	Total		
Weekday AM Peak Hour – Inbound							
West	4,938	10,500	47%	2	4,940	10,500	47%
East	3,135	6,720	47%	2	3,137	6,720	47%
North	374	480	78%	1	375	480	78%
Total	**8,447**	**17,700**	**48%**	**5**	**8,452**	**17,700**	**48%**
Weekday PM Peak Hour – Outbound							
West	4,949	10,590	47%	3	4,952	10,590	47%
East	3,106	6,300	49%	3	3,109	6,300	49%
North	469	660	71%	1	470	660	71%
Total	**8,524**	**17,550**	**49%**	**7**	**8,531**	**17,550**	**49%**

Source: DTS, City and County of Honolulu; AECOM, 2010.

All three screenlines operate under capacity, with higher utilization on buses serving the north screenline. Lines grouped under the west screenline carry the majority of trips into and out of Kakaako.

Although the Project would increase vehicular traffic on major transit service corridors such as Kapiolani Boulevard, Pensacola Street, and, King Street, the Project's overall effect on intersection LOS and delay is negligible at most study intersections. Therefore, Project-generated vehicular traffic is not expected to result in a significant impact to transit operations.

The Project provides a school bus drop-off with a curb cutout lane for buses to pull into on Pensacola Street. The school buses are utilized primarily for school field trips and athletic teams traveling. A potential for conflict between vehicles and school buses using the drop-off may result if the school bus drivers do not fully pull into the curb cutout lane and park the school bus at an angle, where part of the school bus blocks the travel lane.

4.1.3 PEDESTRIAN IMPACTS

Under Existing plus Project Conditions, the existing pedestrian sidewalks along King Street, Pensacola Street, and Kapiolani Boulevard will remain. A new pedestrian corridor between the tennis courts and YMCA wellness facility leading to the plaza provides direct access to the YMCA wellness facility, outdoor dining, girls' locker room, and tennis courts from Kapiolani Boulevard. Crosswalks are provided at the Kamakee Street / Kapiolani Boulevard intersection, which allows for quick and easy access to the YMCA wellness facility for transit riders as the bus stop is located on the south side of Kapiolani Boulevard.

The Project includes improvements to existing facilities and a new proposed use of a YMCA wellness facility. Since there is no associated increase to the student body or faculty / staff size from the Project improvements and the upgraded facilities would primarily serve events occurring outside of the weekday AM and PM peak periods, an increase in pedestrian trips is generally not expected to and from the Project during weekday AM and PM peak hours. During large on-campus activities such as sporting events, there may be a potential increase in pedestrian traffic, but the existing sidewalk width is adequate to accommodate such an increase.

The new YMCA wellness facility would generate additional pedestrian traffic as it is a new facility to the Project site. As discussed previously, the YMCA wellness facility is expected to generate 13 pedestrian trips (eight transit walk trips and five exclusive walk trips) during the weekday AM peak hour and 27 pedestrian trips (17 transit walk trips and ten exclusive walk trips) during the weekday PM peak hour. Drivers are expected to park inside the adjacent parking garage and would not need to use sidewalks to access the YMCA facility. Likewise, bicyclists would be expected to park at or near the facility and would not be expected to use sidewalks. Given this minor increase in pedestrian traffic, the Project would not result in any significant impacts to pedestrian conditions in the Project vicinity.

Pedestrian access to the school bus drop-off is provided by sidewalks on both sides of the drop-off zone. Given the potential for passenger queuing in this area, sufficient sidewalk width should be provided within the zone to increase queuing area and allow other pedestrians to safely pass without impedance.

A new pedestrian corridor would provide direct access to facilities within the Project. Discontinuous sidewalk is provided on Kapiolani Boulevard; no sidewalk is provided along the parking structure entrance. A crosswalk is provided along the parking structure access. This results in a potential for conflict between pedestrians and vehicles along the segment where no sidewalk is provided. It is recommended that a continuous sidewalk be provided along the parking structure entrance on Kapiolani Boulevard. This will provide a continuous sidewalk along Kapiolani Boulevard between Ward Avenue and Pensacola Street.

4.1.4 BICYCLE IMPACTS

The existing bicycle facilities are sufficient to accommodate the minor increase in bicycle trips. The Project is expected add one bicycle trip during the weekday AM peak hour and two trips during the weekday PM peak hour. Thus, the minor increase in bicycle trips is not expected to result in significant impacts to bicycle conditions in the Project vicinity.

In addition, although Project-generated vehicular traffic would increase overall traffic on roadways, this increase is relatively minor compared to existing traffic volumes. While some minor increase in the potential for vehicle-bicycle conflict may occur, in general, this effect is negligible, and not expected to result in significant impacts to bicycle conditions in the Project area.

4.1.5 PARKING IMPACTS

According to the Hawaii Community Development Authority (HCDA) Mauka Area Rules, the requirement for parking spaces is as follows:

- 0.9 space for every 10 students of design capacity; and,
- 1 space per 444 square feet of office floor area.

The existing Project site consists of 10,642 square feet of office floor area with a design capacity of 2,200 students. Based on the HCDA requirements, the existing Project site is required to provide 222 parking spaces. According to the ITE *Parking Generation Manual* the estimated demand for a high school with 2,200 students is 198 spaces and the estimated demand for a general office space of 10,642 square feet is 26 spaces. The total estimated ITE demand for the existing Project site is 224 parking spaces. The existing Project site provides 281 parking spaces, which exceeds the HCDA requirements and the estimated demand by the *ITE Parking Generation Manual*. Parking for large on-campus events is provided on the sport fields only. Thus, no spillover on a regular basis or during large events is expected as sufficient parking is provided. The Project does not propose any additional office space or increase in student body, thus the existing parking supply for the high school is sufficient.

The Project proposes the construction of a new YMCA wellness facility, which requires additional parking. The Project provides two new parking areas: a three-story parking structure adjacent to the YMCA wellness facility with 340 new parking spaces and the parking lot at the replacement rifle range facility with 100 new parking spaces.

The existing parking supply (281 spaces) and proposed parking supply (440 spaces) total to 721 parking spaces. The estimated ITE parking demand for the school (224 spaces) and YMCA wellness facility (163 spaces) total to 387 parking spaces. The parking supply is greater than parking demand, thus the parking supply is sufficient.

4.1.6 SITE ACCESS AND CIRCULATION IMPACTS

The parking structure can be accessed from Kapiolani Boulevard via an entrance and King Street via an access road. The access point on Kapiolani Boulevard is limited to a right in, right out access. There may be a potential for queuing at the Kapiolani Boulevard parking structure access, if sufficient queuing capacity is not provided; this may result into vehicles spilling onto the travel lane.

4.1.7 CONSTRUCTION IMPACTS

It is anticipated that construction activities would occur Monday through Friday from 7:00 AM to 3:30 PM. Deliveries are expected to occur before or after school hours.

Temporary traffic impacts would result from truck movements and construction vehicles traveling to and from the Project. Due to the larger turning radii and slower movements of construction trucks, a temporary reduction in capacity in the Project vicinity is expected. Truck traffic during weekday peak hours may worsen LOS and increase delay at nearby intersections. In order to minimize traffic impacts on neighboring roadways, truck trips should be scheduled during off-peak hours.

Highway facilities such as H-1 and SR 92 would be utilized by construction trucks to travel to and from the Project. Trucks would be utilized to transport oversized equipment / materials and overweight loads on state highway facilities. A permit from the State of Hawaii DOT Highway Division must be obtained prior to transporting oversized materials and overweight loads. This would result in additional trips during the construction period, which may temporarily affect traffic conditions on the highways.

It is anticipated that no regular travel lanes or transit bus stops would need to be closed or relocated during the construction period. If it is determined that travel lane closures would be needed, the lane closures would be coordinated with the City and County of Honolulu and State of Hawaii Department of Transportation (DOT) in order to minimize the impacts on local traffic. In general, lane and sidewalk closures are subject to review and approval of the City and County of Honolulu and State of Hawaii DOT.

During the construction period, adjacent property owners may experience inconvenience due to noise, truck traffic, and lane closures. It is recommended that property owners be notified of such activities and durations in order to minimize the inconvenience.

Construction staging would occur primarily within the confines of the Project site including all project materials, equipment, and, construction vehicles. Parking management and a sufficient supply of parking is recommended to ensure construction vehicles park within the site, and do not park in on-street spaces.

Project-related construction activity, including both construction truck traffic and additional vehicular traffic from construction workers, would not substantially affect vehicular, pedestrian, and bicycle circulation. In addition, any potential impacts would not be considered significant due to their temporary and limited duration.

4.2 2030 CUMULATIVE CONDITIONS

4.2.1 BACKGROUND GROWTH

The 2030 Cumulative Conditions traffic volumes consist of the background traffic volumes due to growth from land uses outside of Kakaako and the traffic volumes attributable to land use changes in Kakaako as a result of development under the Existing Kakaako Mauka Area Plan adopted in 1982. The 2030 Cumulative Conditions traffic volumes are consistent with the Kakaako Mauka Area Plan Analysis. However, the turning movement counts and lane configuration assumed for the Kakaako Mauka Area Plan Analysis do not reflect the effects of coning on Kapiolani Boulevard, which was not in effect at the time the study was conducted. As a result, this analysis reflects updated lane configuration and rerouting for restricted movements due to coning.

4.2.2 TRAFFIC CONDITIONS

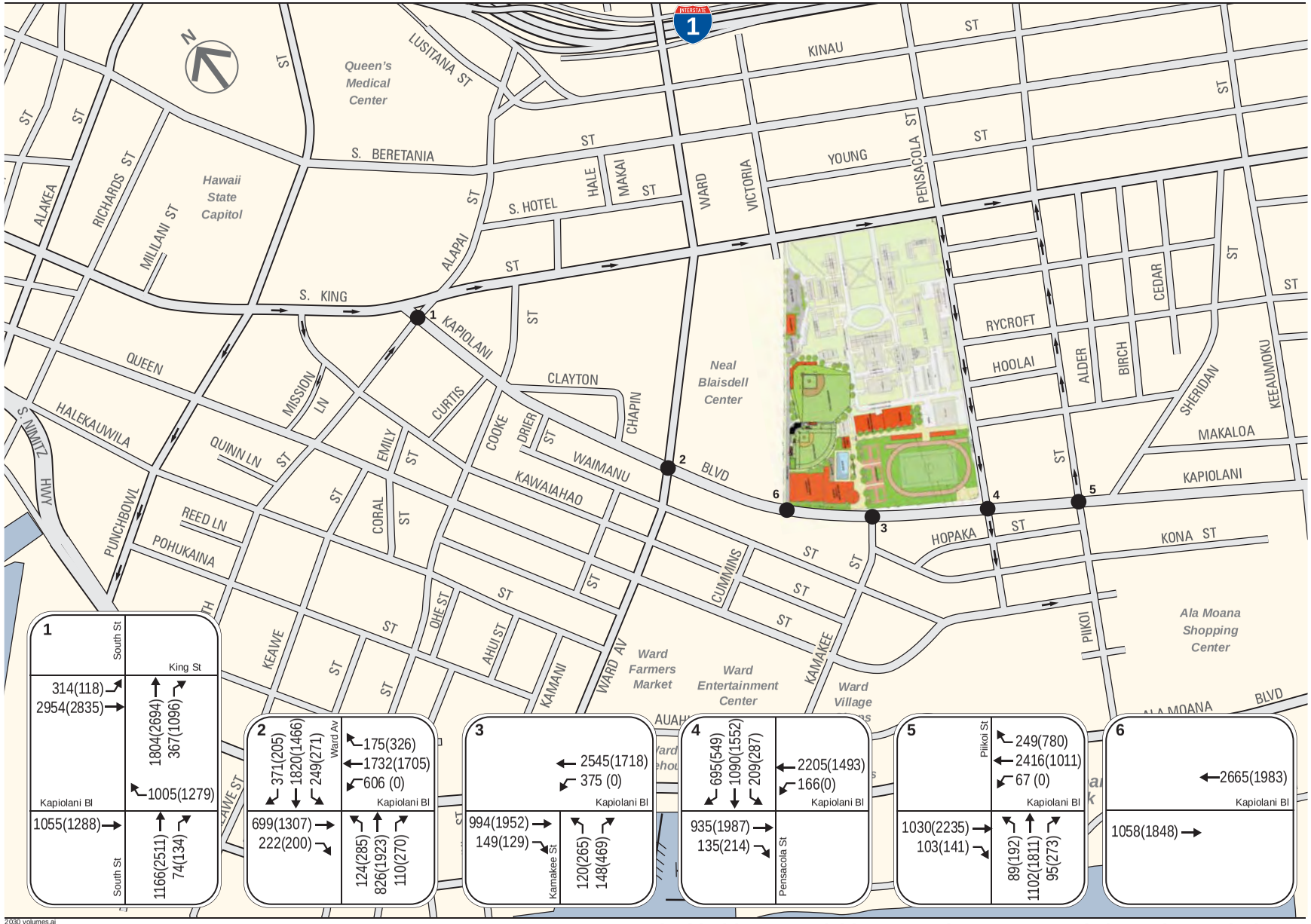
The 2030 Cumulative Conditions traffic volumes are shown in **Figure 12**. The 2030 Cumulative Conditions intersection LOS is summarized in **Table 17**. The detailed LOS calculations are included in **Appendix C**.

Table 17: Intersection Level of Service—2030 Cumulative Conditions

Intersection		Peak Hour	Existing Conditions		2030 Cumulative Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	Kapiolani Blvd. / South St. / King St.	AM	C	28.9	C	30.9
		PM	C	33.5	**F**	**>80.0**
2	Kapiolani Blvd. / Ward Ave.	AM	D	38.4	**F**	**>80.0**
		PM	D	46.2	**F**	**>80.0**
3	Kapiolani Blvd. / Kamakee St.	AM	A	4.0	B	10.3
		PM	A	6.6	B	12.3
4	Kapiolani Blvd. / Pensacola St.	AM	B	15.0	C	31.2
		PM	C	21.5	E	79.8
5	Kapiolani Blvd. / Piikoi St.	AM	B	18.3	C	25.5
		PM	C	21.5	E	69.3
6	Kapiolani Blvd. / Outbound Access Driveway	AM	--	--	--	--
		PM	--	--	--	--

Source: AECOM, 2010.
Notes:
- **Bold** indicates intersection operating at unacceptable LOS (LOS F).
(1) Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis.

AECOM



2030 volumes.ai

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 12

2030 CUMULATIVE TRAFFIC VOLUMES

Weekday AM (PM) Peak Hour

The following study intersections would operate at unacceptable LOS (LOS F) under 2030 Cumulative Conditions regardless of the Project:

1. Kapiolani Boulevard / South Street / King Street (PM peak hour); and,
2. Kapiolani Boulevard / Ward Avenue (AM and PM peak hours).

The LOS for the selected roadway segments is summarized in **Table 18**.

Table 18: Roadway Segment Level of Service—2030 Cumulative Conditions

Intersection		Direction	Peak Hour	Existing Conditions		2030 Cumulative Conditions	
				LOS	Speed[1]	LOS	Speed[1]
1	**Kapiolani Blvd.** between Ward Ave. and Pensacola St.	Eastbound	AM	C	19	C	17
			PM	C	17	C	16
		Westbound	AM	C	17	D	7
			PM	C	16	D	11
2	**Kapiolani Blvd.** between Pensacola St. and Piikoi St.	Eastbound	AM	D	13	D	13
			PM	D	12	D	10
		Westbound	AM	D	13	D	8
			PM	D	10	D	10

Source: AECOM, 2010.
Notes:
[1] Speed presented in seconds per vehicle.

Average speeds near the Project are in the 7 mph to 17 mph range, with the slowest average speeds along Kapiolani Boulevard between Ward Avenue and Pensacola (westbound) during the weekday AM peak hour and between Pensacola Street and Piikoi Street during the weekday PM peak hour.

4.2.3 TRANSIT IMPACTS

The capacity under 2030 Cumulative Conditions is higher due to a fixed guideway system that is expected to operate along an east-west alignment. Ridership after implementation of the fixed guideway system is expected to increase. The screenline analysis is consistent with the Kakaako Mauka Area Plan Analysis. The 2030 Cumulative Conditions screenline capacity utilization is summarized in **Table 19**. The detailed capacity utilization calculations are included in **Appendix D**.

Table 19: Transit Capacity Utilization—2030 Cumulative Conditions

Screenline	Existing Conditions			2030 Cumulative Conditions		
	Rid.	Cap.	Util.	Rid.	Cap.	Util.
Weekday AM Peak Hour – Inbound						
West	4,938	10,500	47%	9,732	15,680	62%
East	3,135	6,720	47%	5,771	13,850	42%
North	374	480	78%	1,198	2,280	53%
Total	**8,447**	**17,700**	**48%**	**16,701**	**31,810**	**53%**
Weekday PM Peak Hour – Outbound						
West	4,949	10,590	47%	9,954	16,490	60%
East	3,106	6,300	49%	6,194	15,440	40%
North	469	660	71%	1,341	2,220	60%
Total	**8,524**	**17,550**	**49%**	**17,489**	**34,150**	**51%**

Source: DTS, City and County of Honolulu; AECOM, 2010.

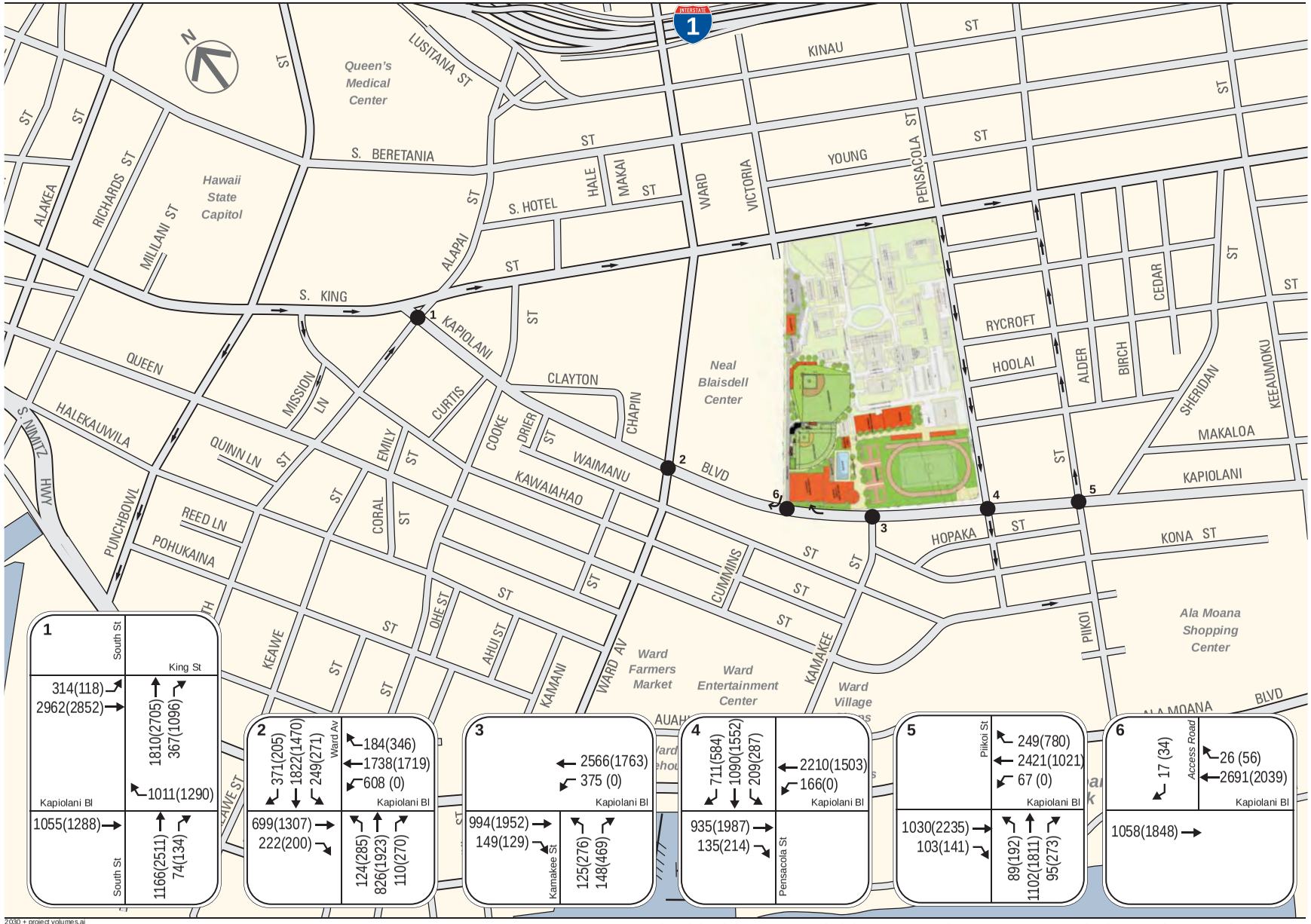
All three screenlines operate under capacity, with higher utilization on buses serving the north and west screenline. Lines grouped under the west screenline carry the majority of trips into and out of Kakaako.

4.3 2030 CUMULATIVE PLUS PROJECT CONDITIONS

4.3.1 TRAFFIC IMPACTS

The 2030 Cumulative plus Project Conditions traffic volumes are shown in **Figure 13**. The 2030 Cumulative plus Project Conditions intersection LOS is summarized in **Table 20**. The detailed LOS calculations are included in **Appendix C**.

AECOM



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McKINLEY HIGH SCHOOL ATHLETIC COMPLEX MASTER PLAN TRANSPORTATION IMPACT STUDY

Figure 13

2030 CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES

Weekday AM (PM) Peak Hour

Table 20: Intersection Level of Service—2030 Cumulative plus Project Conditions

Intersection		Peak Hour	2030 Cumulative Conditions		2030 Cumulative plus Project Conditions	
			LOS	Delay[1]	LOS	Delay[1]
1	Kapiolani Blvd. / South St. / King St.	AM	C	30.9	C	30.9
		PM	**F**	**>80.0**	**F**	**>80.0**
2	Kapiolani Blvd. / Ward Ave.	AM	**F**	**>80.0**	**F**	**>80.0**
		PM	**F**	**>80.0**	**F**	**>80.0**
3	Kapiolani Blvd. / Kamakee St.	AM	B	10.3	B	10.8
		PM	B	12.3	B	13.2
4	Kapiolani Blvd. / Pensacola St.	AM	C	31.2	C	31.4
		PM	E	79.8	E	79.8
5	Kapiolani Blvd. / Piikoi St.	AM	C	25.5	C	25.6
		PM	E	69.3	E	70.2
6	Kapiolani Blvd. / Outbound Access Driveway	AM	--	--	B	14.9
		PM	--	--	C	23.9

Source: AECOM, 2010.
Notes:
- **Bold** indicates intersection operating at unacceptable LOS (LOS F).
[1] Delay presented in seconds per vehicle. For signalized intersections average delays beyond 80 seconds are shown as ">80.0" because delays above this threshold are beyond the meaningful range of the analysis. For unsignalized intersections average delays beyond 50 seconds are shown as ">50.0" because delays above this threshold are beyond the meaningful range of the analysis.

The following study intersections operating at unacceptable LOS (LOS F) under 2030 Cumulative Conditions would continue to operate at unacceptable LOS (LOS F) under 2030 Cumulative plus Project Conditions:

1. Kapiolani Boulevard / South Street / King Street (PM peak hour); and,
2. Kapiolani Boulevard / Ward Avenue (AM and PM peak hours).

These intersections were evaluated to determine if the Project contributed to any intersection impacts. The results of the evaluation are as follows:

1. Kapiolani Boulevard / South Street / King Street
   This signalized intersection would operate at LOS F with 107.5 seconds of delay under 2030 Cumulative Conditions and with 107.5 seconds of delay under 2030 Cumulative plus Project Conditions in the weekday PM peak hour. The Project would add eleven vehicles during the weekday PM peak hour to the westbound right movement. The Project trips comprise well under one percent of the total traffic volumes at the intersection in the PM peak hour, and the Project would not increase the volume-to-capacity[4] (v/c) ratio of the intersection. Therefore, the Project would not cause a significant impact at this intersection.
2. Kapiolani Boulevard / Ward Avenue
   This signalized intersection would operate at LOS F under 2030 Cumulative Conditions and 2030 Cumulative plus Project Conditions in the weekday AM and PM peak hours. The Project increases the intersection average delay by 1.9 seconds during the weekday AM peak hour and 0.5 seconds during the weekday PM peak hour. During the AM peak hour, the Project adds two vehicles to the southbound through movement, two vehicles to the westbound left movement, six vehicles to the westbound through movement, and nine vehicles to the westbound right movement, for a total of 19 vehicles added to the intersection. During the PM peak hour, the project adds four vehicles to the southbound through movement, 14 vehicles to the westbound through movement, and 20 vehicles to the westbound right movement, for a total of 38 vehicles added to the intersection. The Project trips comprise well under one percent of the total traffic volumes, and the Project would only increase the volume-to-capacity (v/c) ration by a maximum of 0.01 in the weekday AM peak hour. Therefore, the Project would not cause a significant impact at this intersection.

The LOS for the selected roadway segments is summarized in **Table 21**.

[4] The volume-to-capacity (v/c) ratio represents capacity sufficiency of an intersection to accommodate the demand.

Table 21: Roadway Segment Level of Service—2030 Cumulative plus Project Conditions

Intersection		Direction	Peak Hour	2030 Cumulative Conditions		2030 Cumulative plus Project Conditions	
				LOS	Speed[1]	LOS	Speed[1]
1	**Kapiolani Blvd.** between Ward Ave. and Pensacola St.	Eastbound	AM	C	17	C	17
			PM	C	16	C	16
		Westbound	AM	D	7	D	7
			PM	D	11	D	11
2	**Kapiolani Blvd.** between Pensacola St. and Piikoi St.	Eastbound	AM	D	13	D	13
			PM	D	10	D	10
		Westbound	AM	D	8	D	8
			PM	D	10	D	10

Source: AECOM, 2010.
Notes:
(1) Speed presented in seconds per vehicle.

Average speeds near the Project are in the 7 mph to 17 mph range, with the slowest average speeds along Kapiolani Boulevard between Pensacola Street and Piikoi Street during the weekday AM and PM peak hours.

4.3.2 TRANSIT IMPACTS

The 2030 Cumulative plus Project Conditions screenline capacity utilization is summarized in **Table 22**. The detailed capacity utilization calculations are included in **Appendix D**.

Table 22: Transit Capacity Utilization—2030 Cumulative plus Project Conditions

Screenline	2030 Cumulative Conditions			2030 Cumulative plus Project Conditions			
	Rid.	Cap.	Util.	Rid.		Cap.	Util.
				Proj.	Total		
AM Peak Hour							
West	9,732	15,680	62%	2	9,734	15,680	62%
East	5,771	13,850	42%	2	5,773	13,850	42%
North	1,198	2,280	53%	1	1,199	2,280	53%
Total	**16,701**	**31,810**	**53%**	**5**	**16,706**	**31,810**	**53%**
PM Peak Hour							
West	9,954	16,490	60%	3	9,957	16,490	60%
East	6,194	15,440	40%	3	6,197	15,440	40%
North	1,341	2,220	60%	1	1,342	2,220	60%
Total	**17,489**	**34,150**	**51%**	**7**	**17,496**	**34,150**	**51%**

Source: DTS, City and County of Honolulu; AECOM, 2010.

All three screenlines operate under capacity, with higher utilization on buses serving the north and west screenline. Lines grouped under the west screenline carry the majority of trips into and out of Kakaako.

5.0 MITIGATION AND IMPROVEMENT MEASURES

This chapter presents the transportation impacts as a result of the Project. In addition, improvement measures have been identified that would improve operating conditions where there would be non-significant impacts.

5.1 EXISTING PLUS PROJECT CONDITIONS

5.1.1 TRAFFIC

The Project would not result in any significant impacts to intersection operating conditions. No significant impacts are expected along adjacent roadways such as Kapiolani Boulevard, Ward Avenue, Pensacola Street, Piikoi Street, and King Street. Therefore, no mitigation measures for traffic conditions are required.

5.1.2 TRANSIT

The Project would not have a significant impact to transit ridership and capacity, since Project-generated transit ridership is expected to be negligible.

The effect of Project-generated vehicular traffic on transit operations in the Project area is also expected to be negligible. Therefore, no mitigation measures for transit conditions are required.

5.1.3 PEDESTRIAN

Project-generated pedestrian traffic is expected to be low and can be accommodated on existing sidewalks and crosswalks without major concern.

The effect of Project-generated vehicular traffic on pedestrians would not be substantial enough to increase the potential for vehicle-pedestrian conflict. Therefore, no mitigations measures for pedestrian conditions are required.

The following improvement measures are recommended:

- Ensure sufficient sidewalk width along the school bus drop-off zone along Pensacola Street in order to accommodate queuing and allow other pedestrians to safely pass. A width of eight to ten feet should be sufficient to ensure adequate pedestrian circulation;
- Provide a sidewalk along the parking structure entrance lane on Kapiolani Boulevard; and,
- The crosswalk across the parking structure driveway at the southwest corner of the site should be designed for high visibility to ensure pedestrian safety.

5.1.4 BICYCLE

Project-generated bicycle traffic is expected to be negligible and can be accommodated on the existing roadways and bikeway facilities.

The addition of Project-generated vehicular traffic would not be substantial enough to increase the potential for vehicle-bicycle conflict. Therefore, no mitigation measures for bicycle conditions are required.

5.1.5 PARKING

The Project parking supply exceeds the HCDA requirements and the projected ITE demand for the Project. The Project would not have a significant impact on parking, since sufficient parking is provided for the Project.

5.1.6 SITE ACCESS AND CIRCULATION

The Project would not have a significant site access and circulation impact, since access to and from the Project for drivers, pedestrians, and other users would be sufficient.

5.1.7 CONSTRUCTION

The Project would not result in any significant construction impacts. Since any potential impacts would not be considered significant due to their temporary and limited duration.

5.2 2030 CUMULATIVE PLUS PROJECT CONDITIONS

5.2.1 TRAFFIC

The Project would not result in any significant impacts to intersection operating conditions. Therefore, no mitigation measures for traffic conditions are required.

Under 2030 Cumulative plus Project Conditions transit, pedestrian, bicycle, parking, and site access and circulation impacts remain as discussed under Existing plus Project Conditions.

Appendix D
PRELIMINARY ENGINEERING REPORT

PRELIMINARY ENGINEERING REPORT

For

McKinley High School Athletic Complex

Honolulu, Oahu, Hawaii

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November 12, 2010

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I. INTRODUCTION

The purpose of this report is to provide an overview of the preliminary engineering design for the McKinley High School Athletic Complex Master Plan project (Project) in Honolulu, Oahu. This report evaluates the existing site conditions and defines requirements for roadway, water, wastewater, and drainage utilities, along with other site improvements.

II. PROPOSED PROJECT

A. Location

The project location is designated as Tax Map Key 2-3-09: 1, bordered by King Street to the north, Pensacola Street to the east, Kapiolani Boulevard to the south and the Neal S. Blaisdell Center to the west. The site is 44.64 acres in total area. Refer to Exhibit 1 for Location and Vicinity Map.

B. Project Description

The proposed project consists of replacement softball field (upgrade to softball stadium); expansion of the existing girl's locker room; replacement track and football field with new fencing; replacement and expansion of tennis courts; replacement boys PE/athletic locker & shower; replacement rifle range; new parking areas; new two-story YMCA Wellness Center with a 50M swimming pool, bleachers and a new three-story parking structure; expansion of the driveway access; new walkway/plazas; new gymnasium; renovation to the existing gymnasium, and a replacement baseball field.

The Athletic Complex will be built in 6 phases as follows:

Phase	Year (Est.)	Facility
1	2010	Softball Stadium
		Girl's Locker Room Expansion
2	2013	Replacement Track & Football Field
		Replacement (6) Tennis Courts
		Replacement 6' Football fence / 4' Track Fence
		Demo exist. rifle range
		Demo exist. tennis courts

		Demo exist. playcourts
		Demo exist. boys PE locker
		Replacement Boys PE/Athletic Locker & Shower
		Replacement Rifle Range
		New Parking Areas
3	2015	New YMCA Wellness Center (2-story)
		New 50M Swimming Pool w/ Bleachers
		New Parking Structure (3-story)
		New Access Drive
		New Pedestrian Walkway/Plaza
4	2017	New Gymnasium
		Demo exist. cottage
		Demo exist. P-1 portable
		Demo exist. weight room
		New Track & Football Field Plaza
5	2020	Renovate Existing Gymnasium
6	2025	Replacement Baseball Field

Preliminary site work includes removal of the existing tennis courts, track and field, rifle range, boys locker room, clearing and grubbing of the vacant land and excavation and embankment for the proposed grading. Existing terrain will be followed to the maximum extent practicable. There will be an expansion to the existing access point to the YMCA parking garage from Kapiolani Boulevard. A new alternate access road utilizing the existing Ewa end access from King Street and Kapiolani Boulevard will be extended along the west property line to the west side of the parking garage. New surface parking areas will be planned from this access road. The ball fields may also be utilized for overflow parking. The existing roadway loop within the campus will be maintained to provide for interior circulation between the front and rear of the campus. The main plaza will also serve as access and fire lane for emergency vehicles. Utility infrastructure work will include waterlines, sewer lines, storm drains, and underground electrical and telephone lines. Any off-site public infrastructure work will conform to the "Standard Specifications" and "Standard Details" of the Department of Public Works, City and County of Honolulu.

Several on-site storm water detention systems will be constructed for the Project. Two detention systems will be located along the west side of the property within the new baseball field and new parking lot. Two other detention systems will be located along the south side of the new track and football field. There will also be one detention system adjacent to the new swimming pool.

III. EXISTING CONDITIONS

A. Topography, Soil Conditions and Drainage

1. Topgraphy

The majority of the site is occupied by the existing football and baseball fields, tennis courts, rifle range, gymnasium, PE storage, locker rooms, and band room. The site is relatively gentle in slope from elevation 13 feet at King Street to elevation 5 feet at Kapiolani Boulevard. An interior roadway from King Street connects the main parking lot areas within the campus, with the largest parking area being in the center of the campus. There are four (4) driveway accesses on Pensacola Street, three (3) on King Street, and one (1) on Kapiolani Boulevard that is currently being constructed with the softball stadium.

2. Soil Conditions

Soil on the site is mainly Makiki clay loam (MkA) with small areas of Fill land, mixed (FL) soils typically found in urban development. Refer to Exhibit 3 for Soil Classification Map. A representative soil profile consists of approximately 20-inches of dark-brown clay loam with a subsoil of approximately 10-inches of dark brown clay loam. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is no more than slight. The Hydrological Soil Group (HSG) for runoff is mostly Type "B" with small areas of Type "C". Descriptions are based on the USDA Soil Conservation Service's publication, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai," State of Hawaii, dated August 1972.

3. Drainage

Generally, drainage runoff from the existing buildings, fields and parking areas are handled as surface flow. Existing drainage infrastructure on adjacent streets consists of catch basins and primarily box culverts. A concrete box culvert on Pensacola Street begins as a 9'x5' box near King Street increasing to a double 10'x5' box near

Kapiolani Boulevard. Bordering the west property line between the school and the Blaisdell Center is a CRM lined ditch which runs mauka to makai tying into a 3'x3' box culvert at Kapiolani Boulevard. This culvert continues on Kapiolani Boulevard before discharging into a 4.5'x4' box culvert at Kamakee Street and the double box culvert in Pensacola Street. These culvert systems ultimately discharge into the drainage channel and lagoon system in Ala Moana Park.

Based on hydrological calculations, the existing drainage runoff estimated from the site is approximately 31.44 cubic feet per second (cfs), based on a 10-year recurrence interval, 1-hour duration rainfall. Refer to Table 1 for Preliminary Drainage Calculations.

According to the Flood Insurance Rate Map (FIRM) 15003C0365F, the site currently is located within flood zone "X" and zone "A". See Exhibit 4.

- Flood Zone X- Areas of 0.2% annual chance of flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance of flood heights.
- Flood Zone A- No base flood elevations determined. The 1% chance flood (100-year flood), also known as the base flood, is the flood that has 1% chance of being equaled or exceeded in any given year. The special flood area is the area subject to flooding by the 1% annual chance of flood. Areas of special flood hazard include zones A, AE, AH, AO, AR, A99, V, and VE. The base flood elevation is the water-surface elevation of the 1% annual chance flood.

Existing Infrastructure

1. Water

There are two (2) existing domestic water meters on Pensacola Street and one (1) existing 8-inch detector check meter for fire protection on King Street, currently serving the campus. The existing fire protection

line threads through the campus with fire hydrants located adjacent to the interior roadways. The domestic system loops through the campus with 4-inch and 6-inch lines. Individual laterals tap off this loop and connect to the buildings.

The off-site mains include a 12-inch main in Kapiolani Boulevard, 12-inch main in Pensacola Street, and 12-inch main in King Street. There are also existing fire hydrants along these major street frontages.

2. Wastewater

The existing McKinley facility is serviced through sewer laterals ranging in size between 6-inches to 10-inches in diameter, primarily running out to Kapiolani Boulevard and Pensacola Street. There is an existing 48-inch sewer main that runs under Pensacola Street turning west onto Kapiolani Boulevard. There is also a 36-inch main in Kapiolani Boulevard.

3. Access

An interior roadway from King Street connects the main parking lot areas within the campus, with the largest parking area being in the center of the campus. There are four (4) driveway accesses on Pensacola Street, three (3) on King Street, and one (1) on Kapiolani Boulevard.

IV. PROPOSED INFRASTRUCTURE IMPROVEMENTS

A. Grading and Drainage

1. Grading

The site will generally remain as close to natural terrain as practicable. Re-grading will be required to create level pads for the YMCA, locker rooms, football field, gym, baseball field, and rifle range.

2. Drainage

The new drainage system within the school campus will consist of underground drain lines ranging in diameter from 8-inch to 24-inches. The system will have a combination of connections to the building's roof gutter collection system as well as drain inlets in open areas to collect runoff from fields and pavements. Based on hydrological calculations, the drainage runoff estimated for proposed conditions is approximately 61.58 cfs, based on a 10-year recurrence interval, 1-hour duration rainfall. To mitigate the runoff rates and to improve water quality, five (5) individual underground storm drainage detention systems will be installed in various locations to detain runoff prior to discharge into the City system. The detention systems will provide separation of suspended solids and debris from the outflowing water. If required by the City for additional stormwater quality, hydrodynamic separators or filtration devices may need to be installed prior to discharges to the City system. The football/soccer field is anticipated to consist of artificial field turf and will have a subdrainage system to keep the field well-drained. It is anticipated that the connections to the City system will be at the CRM lined-ditch and the box culvert in Kapiolani Boulevard.

B. Proposed Infrastructure

1. Water System

Based on the BWS's "Water System Standards, 2002," the Project will require an average daily demand of about 61,580 gallons per day (gpd), and a peak hour flow rate of approximately 385 gallons per minute (gpm), based on an 8-hour day, which is typical for this type of facility (See Table 3 for Preliminary Water Demand Calculations). The standard fire flow required for the Project is 2,000 gpm for a 1-hour period. The actual required fire flow will need to be determined based on building sprinkler system layouts and building types.

Existing facilities will continue to be fed from the existing water main and fire protection systems. The proposed athletic complex will be

served from a new connection to the 12-inch main in Kapiolani Boulevard. A new 8"x2" FM meter is planned with a 12-inch water line serving all new facilities, including provisions for irrigation demand and fire protection. Fire hydrants will be located adjacent to the main plaza which will serve as the fire lane for the complex. Buildings that have fire sprinklers will have a minimum 6-inch fire sprinkler connection as well as 6-inch fire department connection. Domestic water laterals will typically be 2-1/2 inches.

2. Wastewater System

Based on the City's "Wastewater System Standards," the Project will generate an average daily flow of about 47,525 gpd of wastewater. Assuming an 8-hour use period, peak flow translates to about 426,920 gpd (see Table 4 for Preliminary Wastewater Calculations).

The existing 10-inch main will be abandoned and rerouted to serve as the main trunk for the campus. The new line will run under the proposed plaza area and connect to the existing 36-inch sewer main in Kapiolani Boulevard. Internally, 6-inch and 8-inch laterals will branch off the 10-inch line and provide connections to the new facilities, including the YMCA, locker rooms, football field, gymnasium, baseball field, and rifle range.

3. Access Improvements

As mentioned previously, driveway access to the main plaza and YMCA parking garage will be from Kapiolani Boulevard. The access road will utilize the existing access from King Street and Kapiolani Boulevard connecting to the parking garage with new parking areas located along this access road. Interior circulation between the front and rear campuses will be maintained via the existing roadway loop within the campus. Access and fire lane for emergency vehicles will be through the main plaza.

V. CONCLUSION

The proposed improvements for this project will be designed in accordance with the applicable rules and regulations of the City and County of Honolulu. Existing and future utilities will provide adequate potable water, wastewater treatment and storm drainage management for the Project. Based on the foregoing study, the project is expected to have no adverse effects on existing facilities and the surrounding environment.

TABLE 1. PRELIMINARY DRAINAGE CALCULATIONS
MCKINLEY HIGH SCHOOL ATHLETIC COMPLEX
11/18/2010

Ref. "Rules Relating to Storm Drainage Standards," January 2000, City & County of Honolulu, DPP.

Q=CIA

EXISTING CONDITIONS

C-Value:

North: $\frac{(0.95)(0.71 \text{ acres}) + (0.15)(7.89 \text{ acres})}{8.59}$ = 0.22

South: $\frac{(0.95)(2.99 \text{ acres}) + (0.15)(12.26 \text{ acres})}{15.25}$ = 0.31

Time of Concentration

North Tc: 560 feet over grass V=1.5 fps and 285 feet of pipe flow V=5 fps — 7.17 minutes

South Tc: 650 feet over grass V=1.5 — 7.20 minutes

Rainfall Intensity:

North I_{10}: 1.9 inches/hour x 2.5 correction factor = 4.75 in/hr

South I_{10}: 1.9 inches/hour x 2.5 correction factor = 4.75 in/hr

Area:

North A= 8.59 Acres

South A= 15.25 Acres

Q (existing):

North Q_{10}: (0.22)(4.75 in/hr)(8.59 acres) = 8.98 cfs

South Q_{10}: (0.31)(4.75 in/hr)(15.25 acres) = 22.46 cfs

TOTAL EXISTING Q_{10}: **31.44 cfs**

PROPOSED CONDITIONS

C-Value:

North: $\frac{(0.95)(2.19 \text{ acres}) + (0.15)(6.40 \text{ acres})}{8.59}$ = 0.35

South: $\frac{(0.95)(8.39 \text{ acres}) + (0.15)(6.86 \text{ acres})}{15.25}$ = 0.59

Time of Concentration

North Tc: 260 feet over grass V=1.5 fps and 410 feet of pipe flow V=5 fps — 5 minutes

South Tc: 250 feet over pavement V=5.0 fps and 1,100 feet of pipe flow V=5 fps — 5 minutes

Rainfall Intensity:

North I_{10}: 1.9 inches/hour x 2.7 correction factor = 5.13 in/hr

South I_{10}: 1.9 inches/hour x 2.7 correction factor = 5.13 in/hr

Area:

North A= 8.59 Acres

South A= 15.25 Acres

Q (proposed):

North Q_{10}: (0.35)(5.13 in/hr)(8.59 acres) = 15.42 cfs

South Q_{10}: (0.59)(5.13 in/hr)(15.25 acres) = 46.16 cfs

TOTAL PROPOSED Q_{10}: **61.58 cfs**

VOLUME OF RUNOFF INCREASE

[Q (proposed) - Q (existing)]x(3600/2)

(61.58-31.44)(3600/2)= **54,252 cf**

TABLE 2. PRELIMINARY STORM WATER QUALITY CALCULATIONS
MCKINLEY HIGH SCHOOL ATHLETIC COMPLEX

11/18/2010

Ref. "Rules Relating to Storm Drainage Standards," January 2000, City & County of Honolulu, DPP.

Detention Based Water Quality Control

Runoff Coefficient:

C = 0.05 + (0.009) x (IMP)

C = 0.05 + (0.009)x(44.4%) = 0.45

Volume Calculation:

WQDV = C x 1" x Area x 3630

WQDV = 0.45 x 1" x 23.84ac x 3630 = 38,943 cf

Detention Basin Drawdown Time: 48 hours

Rate of Drawdown: 0.23 cfs

Total Detention

volume of runoff increase + WQDV

54,252 cf + 38,943 cf = **93,195 cf**

TABLE 3. PRELIMINARY WATER DEMAD CALCULATIONS
MCKINLEY HIGHSCHOOL ATHLETIC COMPLEX
11/18/2010

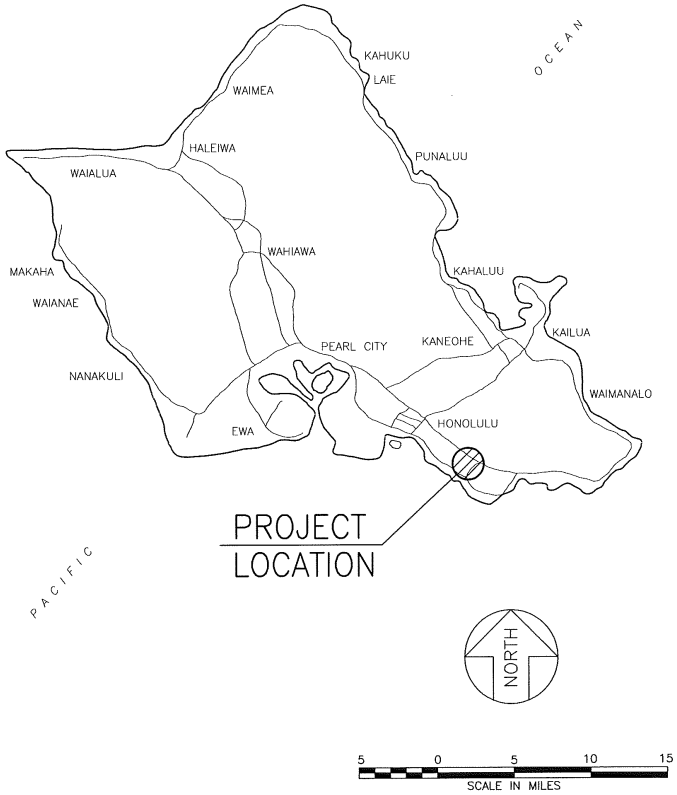
Building Facility	No. of Students or employees	Gal/(Student or employees)/ Day	Average Daily Demand GPD	Average Flow Rate* (8 hr day) GPM	Max. Daily Demand GPD	Peak Flow Rate GPM
Athletic Complex	1810	30	54,300	113	81,450	339
YMCA Wellness Center	91	80	7,280	15	10,920	46
TOTAL POTABLE WATER			61,580	128	92,370	385

Fire Flow Requirement = 2000 gpm for 2 hours

* Calculations are based on the assumption that water is consumed during an 8-hour period per day.

TABLE 4. PRELIMINARY WASTEWATER CALCULATIONS
MCKINLEY HIGH SCHOOL ATHLETIC COMPLEX
11/18/2010

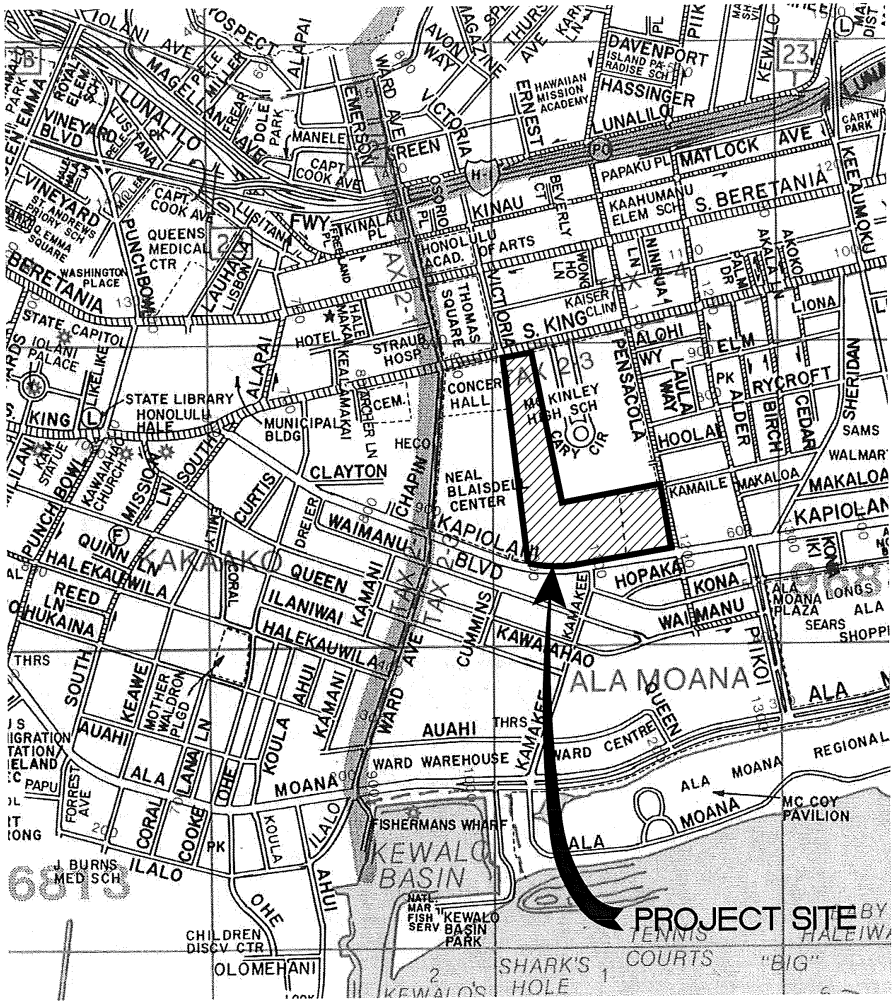
BLDG. FACILITY	No. of Persons	GALLONS PER CAPITA PER DAY (gpcd)	AVERAGE FLOW (gpd)	MAX FLOW FACTOR	MAX FLOW (gpd)	DRY WEATHER INFILTRATION/ INFLOW (gpcd)	DESIGN AVE. FLOW (gpd)	DESIGN MAX. FLOW (gpd)	WET WEATHER INFILTRATION/ INFLOW RATE (gad)	DESIGN PEAK FLOW (gpd)
Athletic Complex	1,810	25	45,250	5	226,250	35	108,600	289,600	2,750	410,353
YMCA Wellness Center	91	25	2,275	5	11,375	35	5,460	14,560	2,750	16,568
TOTAL WASTEWATER			47,525		237,625					426,920



ISLAND OF OAHU

VICINITY MAP

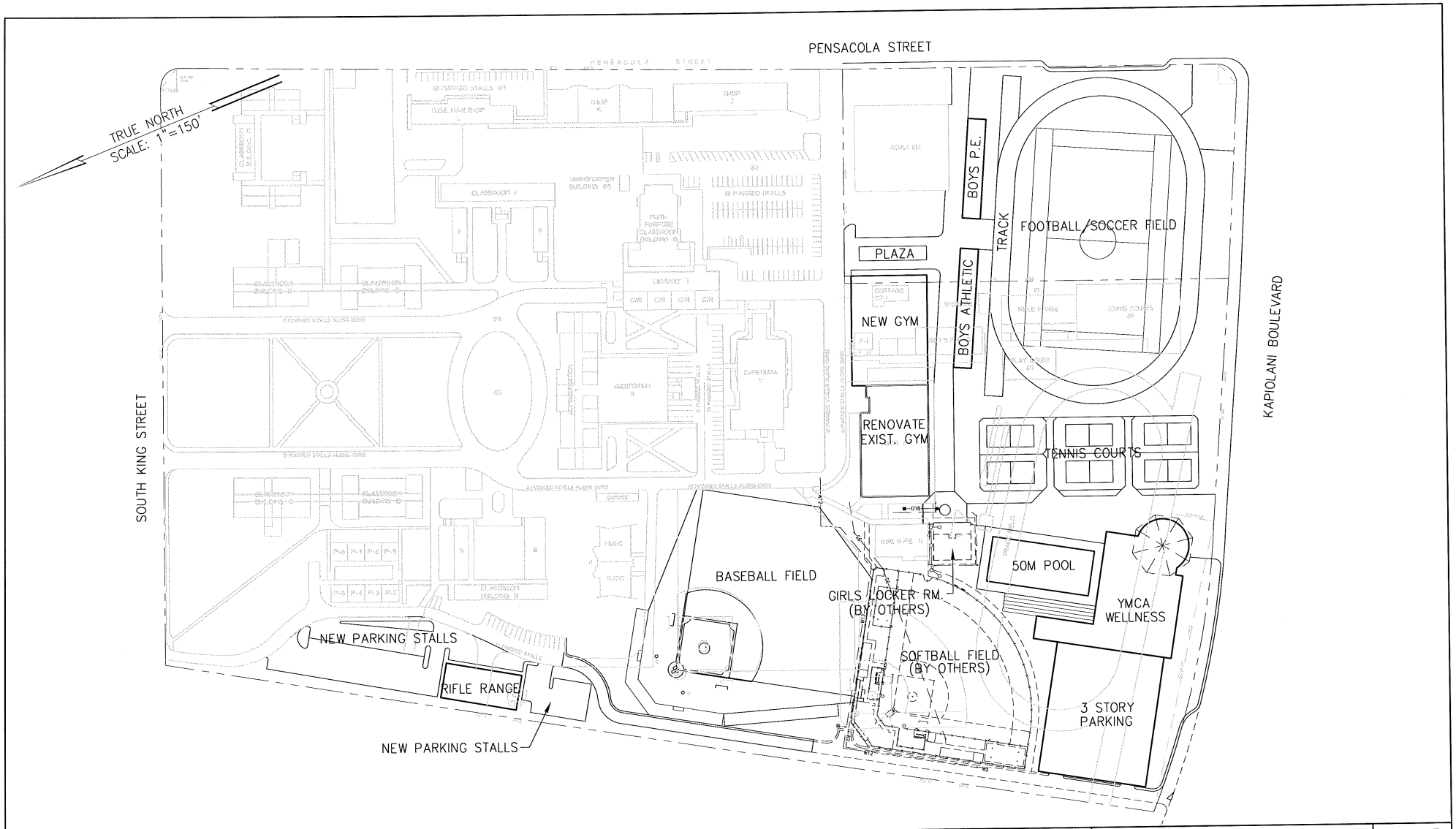
NOT TO SCALE



LOCATION MAP

NOT TO SCALE

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX PRELIMINARY ENGINEERING REPORT HONOLULU, OAHU, HAWAII	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII VICINITY MAP AND LOCATION MAP	EXHIBIT 1



McKINLEY HIGH SCHOOL
ATHLETIC COMPLEX
PRELIMINARY ENGINEERING REPORT
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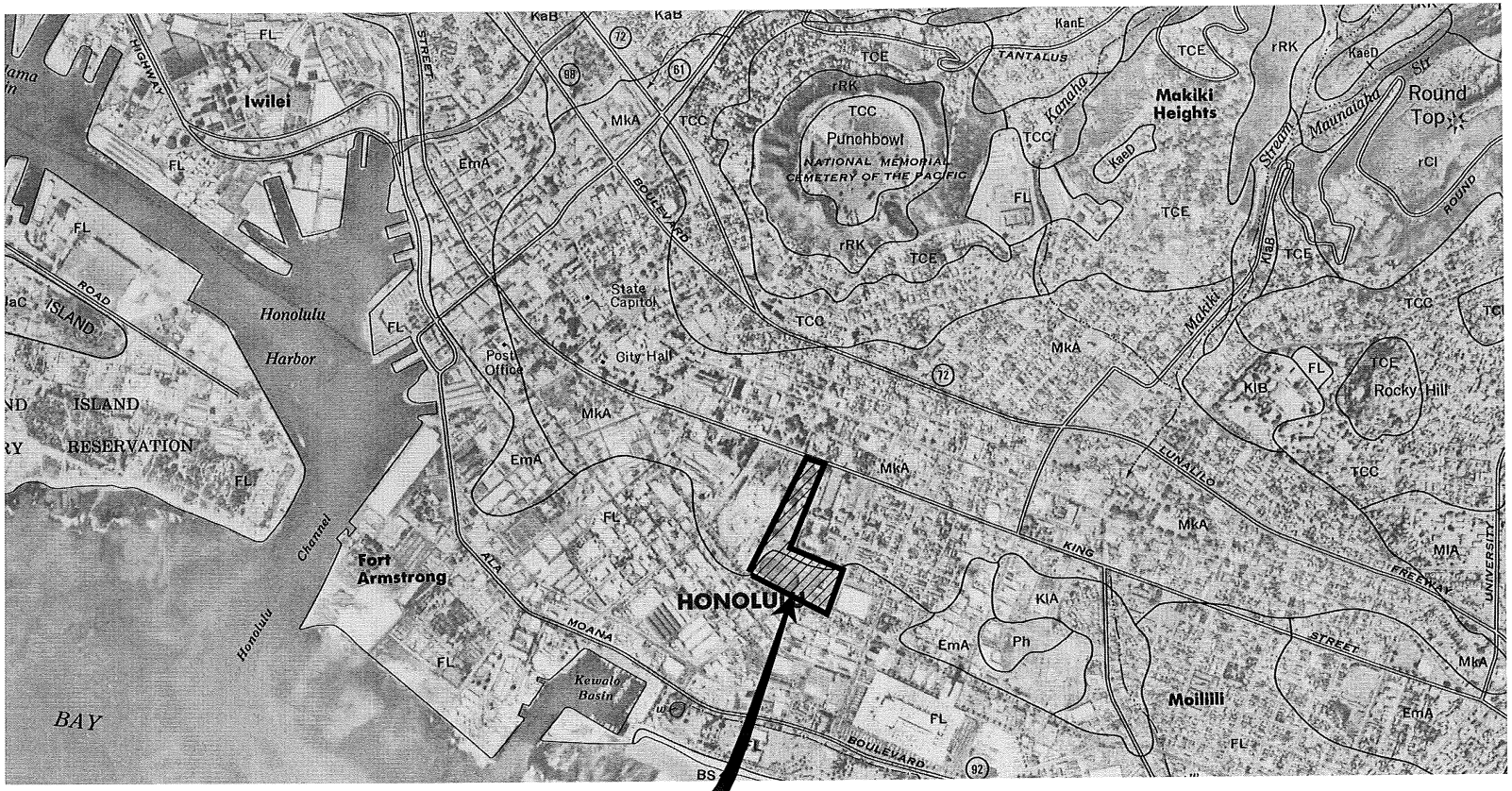
PRELIMINARY SITE PLAN

EXHIBIT 2



PROJECT SITE

NOTE:

REFER TO SHEET NUMBER 62 OF THE "SOIL SURVEY OF ISLANDS OF KAUAI, OAHU, MAUI, MOLOKAI, AND LANAI, STATE OF HAWAII", PUBLISHED BY USDA SOIL CONSERVATION SERVICES, DATED AUGUST 1972.

McKINLEY HIGH SCHOOL ATHLETIC COMPLEX PRELIMINARY ENGINEERING REPORT HONOLULU, OAHU, HAWAII	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII SOIL CLASSIFICATION MAP	EXHIBIT 3

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0365F

FIRM
FLOOD INSURANCE RATE MAP
CITY AND COUNTY
OF HONOLULU,
HAWAII

PANEL 365 OF 395

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HONOLULU, CITY AND COUNTY OF	150001	0365	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
15003C0365F

MAP REVISED
SEPTEMBER 30, 2004

Federal Emergency Management Agency

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4278000 M	1000-meter Universal Transverse Mercator grid tick values, zone 4
600000 FT	5000-foot grid tick values: Hawaii State Plane coordinate system, zone 3 (FIPSZONE 5103), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M 2	Coastal Mile marker

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
November 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 30, 2004 - to change Special Flood Hazard Areas, to update map format, to reflect revised shoreline and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.go

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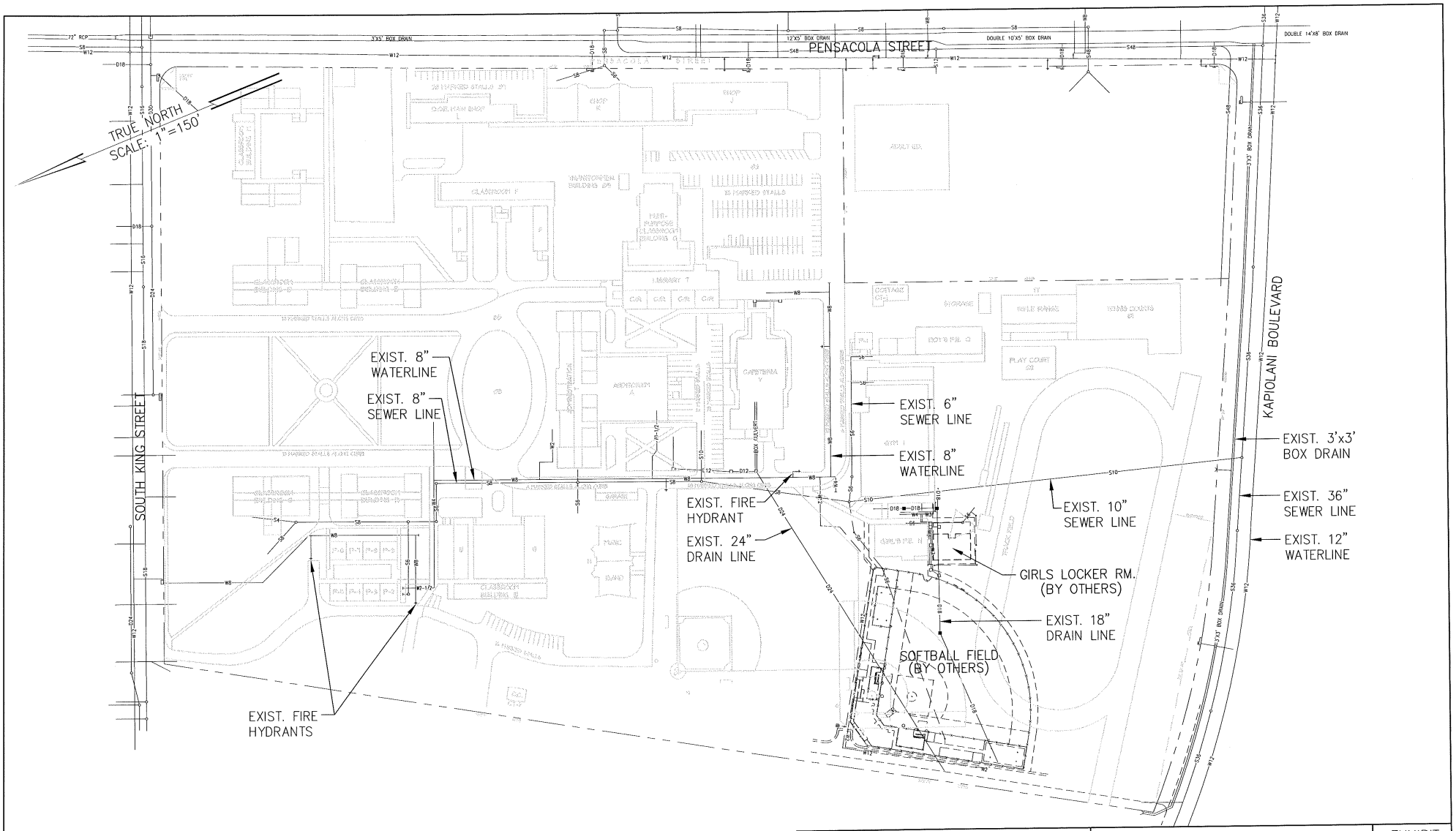
FLOOD MAP

EXHIBIT
4



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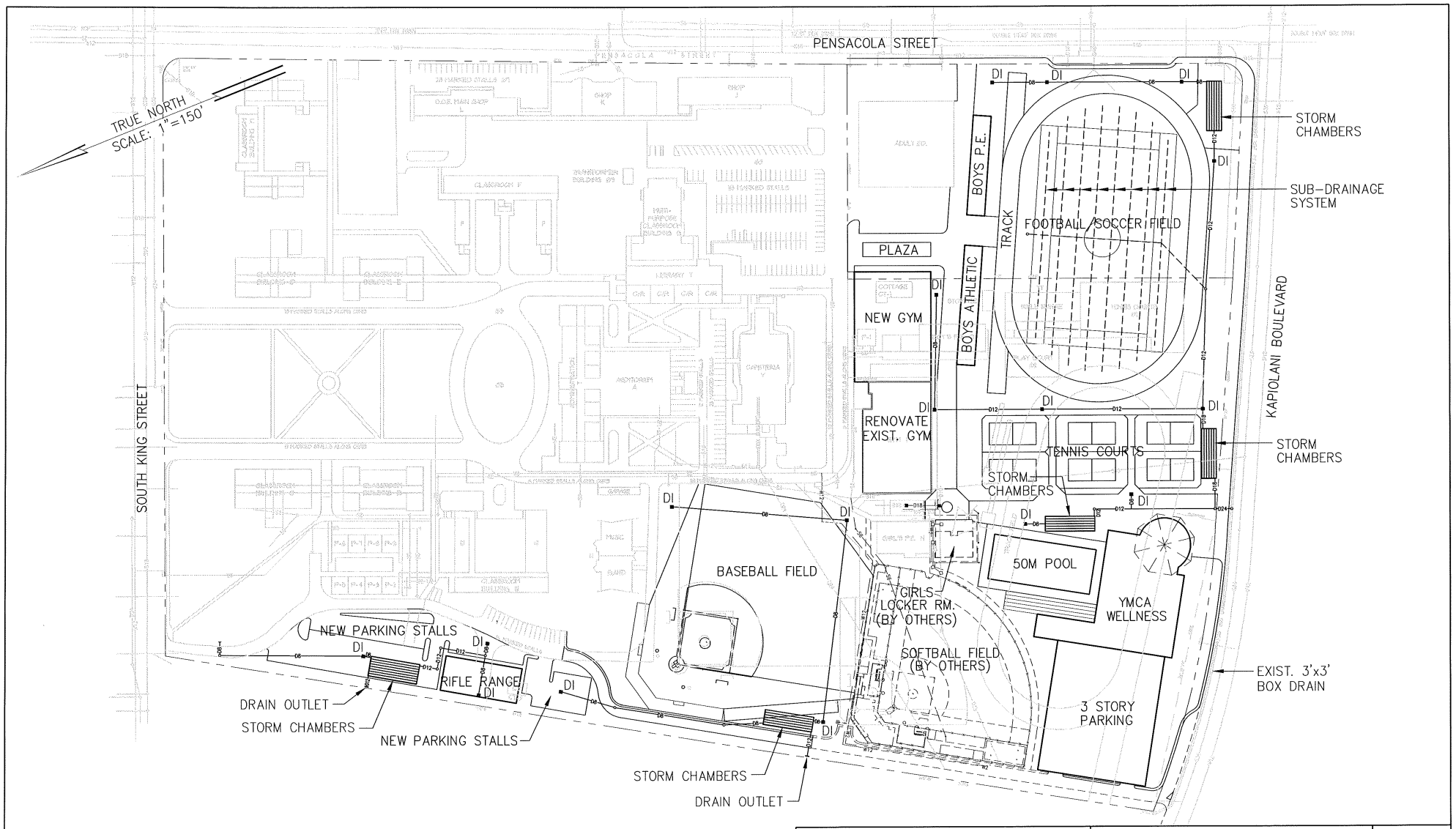
EXISTING UTILITY PLAN

EXHIBIT 5



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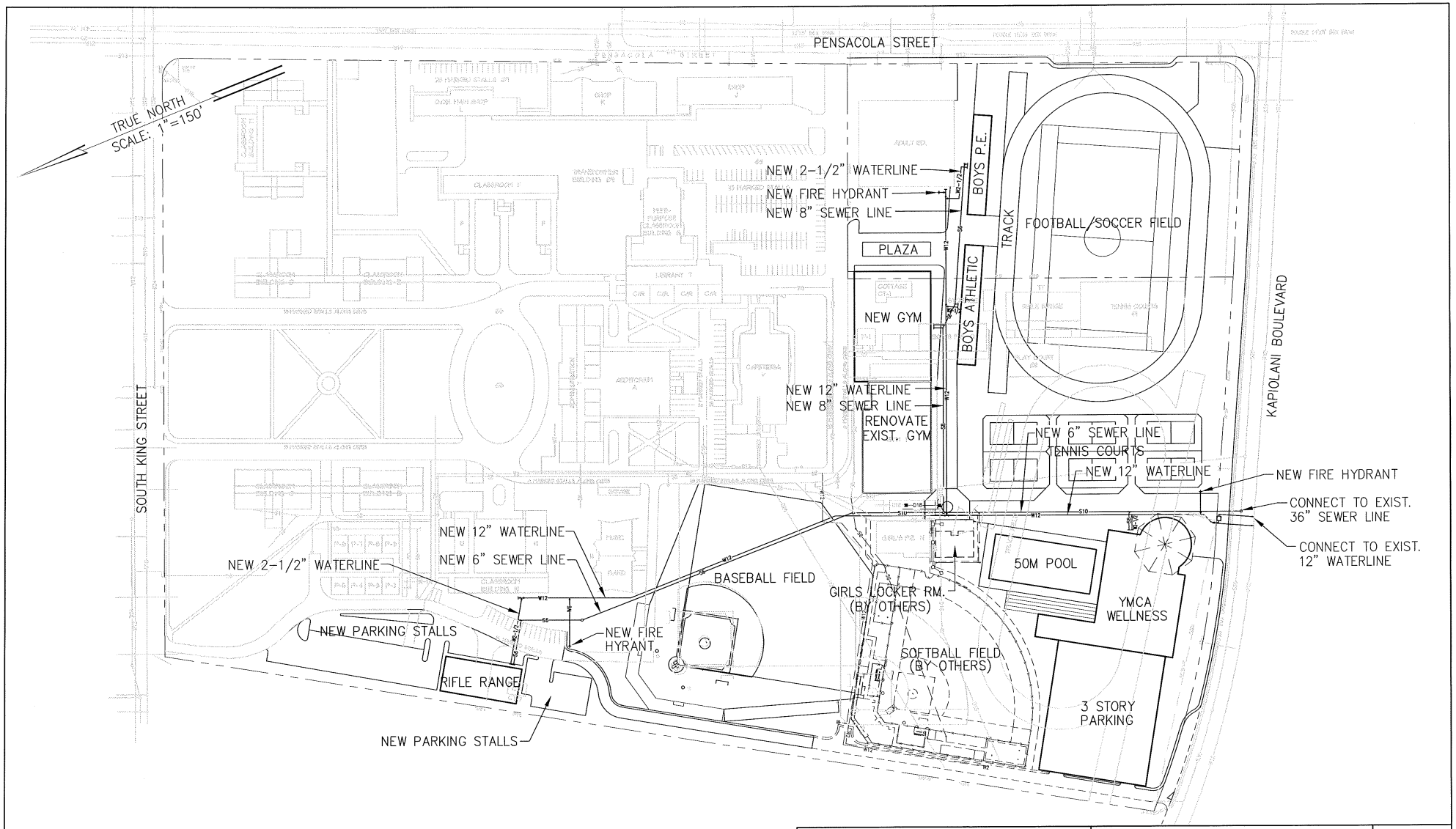
PROPOSED DRAINAGE MAP

EXHIBIT 6



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PROPOSED UTILITY PLAN

EXHIBIT 7

Appendix E

PRELIMINARY ELECTRICAL UTILITY ASSESSMENT

MOSS Engineering, Inc. **Electrical / Lighting Engineers**
1357 Kapiolani Blvd., Suite 830 **Honolulu, Hawaii 96814**
Richard M. Moss P.E.

August 18, 2010

Group 70 International
925 Bethel Street
Honolulu, HI 96813 via E-mail: ckaneshiro@group70int.com

Attention: Mr. Charles Kaneshiro

Project: **McKinley High School – Athletic Complex Master Plan** (MEI # 07096.10)

Subject: Electrical Utility Assessment Report

Purpose:

The purpose of this assessment report is to discuss the impact of the Conceptual Athletic Complex Master Plan improvements upon the existing electrical and telecommunications infrastructure of the McKinley High School campus. The infrastructure improvements suggested herein are conceptual in intent, but do take into consideration existing field conditions based upon limited field verification, available as-built documentation, and concept discussions with utility companies (electrical, telephone and TV). Please refer to the enclosed electrical concept plans for graphical reference.

Electrical - Existing:

- Service:
  - Electrical power to the campus is provided by a Hawaiian Electric (HECO) 1000 KVA transformer located in Vault No. 24.
  - The electrical vault is within a stand-alone building between Buildings G (Hirata Hall) and P-10 (Graphic Arts).
  - Building 857 (McKinley School for Adults) at the southeast corner of the campus is serviced by a separate HECO pad-mounted transformer.
- Distribution:
  - The main electrical switchboard (MSB), rated at 1600 Amps, is located in a separate room adjacent to HECO Vault No. 24.
  - From the MSB, electrical power at 480/277 Volts is distributed to various buildings on campus via a system of handholes and underground ducts.
  - Transformers within the individual buildings convert the 480/227 Volts down to 208/120 Volts where required for general power utilization.
- Capacity:
  - According to information received from HECO, the school operated at an average demand of 846 KVA or 85% of total electrical capacity between October 2007 and September 2008.
  - The lowest average energy demand during the above period was 747 KVA in January 2007; the highest average energy demand was 974 KVA (97.4% of total electrical capacity) in August 2008.
- Impact by Master Plan Improvements:
  - It is noted that the above electrical demand of 97.4% in August 2008 virtually eliminates the opportunity to add significant loads such as new buildings to the system. Likewise, the existing MSB is "matched" to the size of the HECO transformer. Increasing the HECO transformer to a larger size requires the entire MSB to be increased to the next higher rating.

  - In order to accommodate the electrical requirements the Athletic Complex Master Plan Improvements, the electrical service capacity to the campus must be increased by one or a combination of these means:
    - Option 1: Existing services to remains as-is for existing buildings and provide new service for new Athletic Complex improvements.
      - Advantage: CIP funds are directed to support improvements.
      - Disadvantage: Facilities such as the Rifle Range are remotely located relative to the other facilities and providing power to this building is potentially more costly than other alternatives.
    - Option 2: Upgrade to larger HECO service transformer & MSB; provide new service for new Athletic Complex improvements.
      - Advantage: "Best of both worlds". Existing electrical infrastructure may be utilized to connect new buildings (Rifle Range, New Gym) to campus distribution system.
      - Disadvantage: CIP funds used to upgrade HECO transformer & MSB for existing campus. Improvements require trenching across existing campus to install conduit ducts back to MSB.
    - Option 3: Provide separate HECO permanent and/or temporary services to new Athletic Complex facilities as they are built.
      - Advantage: Facilities may be built in phases per concept plan.
      - Disadvantage: Requires multiple service feeds. CIP funds used for temporary infrastructure.

Telecommunications:

- Telephone:
  - The main telephone room is located in the Administration Building.
  - Telephone cabling is distributed to various buildings on campus via a system of handholes and underground ducts.
  - The telephone system is maintained by a third-party vendor.
- Data:
  - The main data (computer) room is located in the Administration Building.
  - Data cabling is distributed to various buildings on campus via a system of handholes and underground ducts.
  - The data system is maintained by the Department of Education's Network Support Services Branch (NSSB).
- Television:
  - The main media room is located in Building T (Audio/Visual Center).
  - Television cabling is distributed to various buildings on campus via a system of handholes and underground ducts.
  - The television distribution system is maintained by the Department of Education's Network Support Services Branch (NSSB).
- Impact by Master Plan Improvements:
  - Telecommunications system handholes (HH) are sufficiently distributed throughout the campus. The telecommunications requirements of the new Athletic Complex appear minimal. No issues are foreseen by extending telecommunications ducts from an existing HH group.

Telemetry:

- Fire Alarm:
  - The Simplex 4100 main fire alarm control panel (FACP) is located in the Administration Building.
  - Fire alarm system cabling is distributed to various buildings on campus via a system of handholes and underground ducts.
- Program Bell:
  - The Simplex "Time Control Center" panel is located in the Administration Building.
  - Fire alarm system cabling is distributed to various buildings on campus via a system of handholes and underground ducts.
- Impact by Master Plan Improvements:
  - Telemetry system handholes (HH) are sufficiently distributed throughout the campus. The telemetry requirements of the new Athletic Complex appear minimal. No issues are foreseen by extending telemetry ducts from an existing HH group.

Phasing Summary of Electrical Improvements:

- Phase 1
  - New Softball Field, Softball Field Lighting, and New Girls Locker room have already proceeded into design. This Master Plan Summary incorporates the infrastructure provided by the design teams. Cost has been excluded for these projects as they have already been bid.
- Phase 2
  - Track & Field and Tennis Courts, Boys P.E. and Boys Athletic Locker Buildings
    - Demo existing Rifle Range and associated electrical and telecommunication feeds.
    - No electrical work anticipated unless there is immediate requirement for security and tennis court lighting.
    - Security lighting for the field appears minimal and may be tapped from the existing gymnasium.
    - There is presently no capacity on the campus distribution system to accommodate the electrical requirements for tennis court lighting. Electrical service for tennis court lighting may be provided by one of the following:
      - Resize & utilize semi-permanent HECO electrical service for Softball Field lighting until connection to Athletic Complex distribution system in Phase 2.
      - Upgrade campus HECO transformer & MSB to accommodate lighting load. This option appears economically unfeasible.
    - Provide new metal-halide tennis court lighting for 50 foot-candle average illumination.
  - New Rifle Range
    - There is presently no capacity on the campus distribution system to accommodate the electrical requirements for the Rifle Range. Electrical service for the Rifle Range may be provided by one of the following:
      - Provide permanent HECO electrical service from King Street
      - Upgrade campus HECO transformer & MSB to accommodate electrical requirements for Rifle Range. This option appears economically unfeasible.
- Phase 3
  - YMCA Wellness Center & Parking Structure
    - Electrical: New service shall be obtained from an existing HECO MH on Kapiolani Boulevard and shall be independent of the campus electrical distribution system.
    - Telephone / TV / Internet: New service from an existing Hawaiian Telcom MH on Kapiolani Boulevard and shall be independent of the campus telecom distribution system.
    - Spare electrical capacity shall be designed into the system to allow for future additional parking levels.
  - Access Drive at Baseball Field
    - Power for lighting shall be provided from the Rifle Range.
    - Lighting levels shall be appropriate for safety and security.
  - Pedestrian Walkway / Plaza
    - Power for lighting the plaza walkway between the YMCA and Tennis Court facility shall be provided from the YMCA.
    - Lighting theme shall match that of the Kamakee St. corridor down to Victoria Ward Center.
    - Lighting levels shall be appropriate for safety and security.
- Phase 4
  - New Gymnasium
    - There is presently no capacity on the campus distribution system to accommodate the electrical requirements for the New Gymnasium. Electrical service may be provided by one of the following:
      - Provide semi-permanent HECO electrical service from Pensacola Street.
      - Upgrade campus HECO transformer & MSB to accommodate electrical requirements for Rifle Range. This option appears economically unfeasible.

  - New Gymnasium Plaza
    - Power for lighting the plaza walkway may be provided from the New Gymnasium.
    - Lighting theme shall match that of the Kamakee St. corridor down to Victoria Ward Center.
    - Lighting levels shall be appropriate for safety and security.
- Phase 5
  - Renovate Existing Gym
    - Interior electrical renovation as required.
    - No electrical or telecommunications infrastructure work is anticipated.
- Phase 6
  - Relocate & rebuild Baseball Field
    - No electrical work anticipated unless there is immediate requirement for field lighting. There is presently no capacity on the campus distribution system to accommodate the electrical requirements for field lighting.
    - Electrical service for field lighting may be provided by one of the following:
      - Provide electrical service connection to Athletic Complex distribution system provided in Phase 2.
      - Upgrade campus HECO transformer & MSB to accommodate lighting load. This option appears economically unfeasible.

Best regards,

MOSS Engineering, Inc.

Cc: File.

McKinley HS Utility Assessment - Electrical 2010-08-16.doc

Appendix F
AIR QUALITY IMPACT ASSESSMENT

B.D. NEAL & ASSOCIATES
Applied Meteorology • Air Quality • Computer Science
P.O. BOX 1808 • KAILUA-KONA, HAWAII 96745 • TELPHONE (808) 329-1627 • FAX (808) 325-6739
EMAIL: bdneal@bdneal.com

December 6, 2010

Ms. Christine Ruotola
Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813

Subject: McKinley High School Athletic Complex Master Plan
Air Quality Impact Assessment

Dear Ms. Ruotola:

In response to your request, we have examined the potential air quality impacts related to the proposed McKinley High School Athletic Complex Master Plan Project located in the Ala Moana District near downtown Honolulu, Oahu. The results of this examination along with background information related to this issue and recommended mitigation measures are summarized below.

Project Description

The Department of Education is proposing renovations at McKinley High School Athletic Complex and the addition of a YMCA wellness facility at the McKinley High School campus located at 1039 South King Street in Honolulu on the island of Oahu. The project includes upgrades to the track and football field and tennis courts; replacement of Boy's PE/athletic locker rooms; renovations to existing gym; reconfiguration of baseball field; relocation of rifle range with additional 100 stalls of parking; new gym adjacent to existing gym; and new YMCA wellness facility with swimming pool and adjacent three-story parking structure. It is expected that the proposed project would be developed over a period of several years beginning in the year 2013 (subject to availability of funding).

Ambient Air Quality Standards

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. The federal and state standards pertain to most of the same parameters, although at present, for several of the parameters regulated, the federal standards are more stringent than the Hawaii standards.

Regional and Local Climatology

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. Winds are predominantly trade winds which are deviated somewhat from the northeast toward the east or southeast 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 are often lower compared to more exposed coastal locations, but the trade winds still provide 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 70°F to 84°F. Extreme temperatures range from about 53°F to about 95°F. Rainfall is relatively low with an average of about 22 inches per year.

Existing Air Quality Conditions

Air quality in the vicinity of the project presently is mostly affected by emissions from vehicular sources which emit carbon monoxide, nitrogen oxides, hydrocarbons and other air pollutants. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all state and national air quality standards are currently being met in the downtown Honolulu area.

Air Quality Impacts of Project

Short-term direct and indirect impacts on air quality could potentially occur during 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 soil excavation, aggregate processing and vehicle movement; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term air quality impacts

from the disruption of traffic on nearby roadways, from 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 from construction activities are difficult to estimate accurately because of their elusive nature of emission and because the potential for dust 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 U.S. EPA 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 from project construction would likely be somewhere near this level. In any case, State of Hawaii Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the project property line. Thus, an effective dust control plan for the project construction phase should be prepared.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust. On days without rainfall, construction areas should be watered at least twice during the workday to help keep dust to a minimum. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Haul trucks tracking dirt onto paved streets from unpaved areas are oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as tire washing or road cleaning, may be appropriate. Dust monitoring could be considered as a means to quantitatively evaluate 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 standards for nitrogen dioxide are set on an annual basis and are 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. Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions increase. 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.

After the period of construction, long-term impacts on air quality from motor vehicle exhausts can potentially occur at or near any project that attracts large volumes of motor vehicle traffic. Carbon monoxide emissions are usually the primary issue, and public areas near traffic-congested intersections are the main concern. The project can be accessed from a total of eight driveways from each of three roadways bordering the project: King Street, Pensacola Street and Kapiolani Boulevard. A new access road will also be provided west of the project site that can be accessed from King Street and from Kapiolani Boulevard. The project traffic study examined five existing nearby roadway intersections along Kapiolani Boulevard. These included Piikoi Street, Pensacola Street, Kamakee Street, Ward Avenue and South Street. The intersection of King Street and South Street was also studied, and for the future scenario with the project, the intersection of Kapiolani Boulevard and the new access road was assessed. The project traffic study indicates that with the project, peak-hour traffic volumes at these intersections would likely increase by about 1 percent or less. The traffic study also indicates that the existing traffic level-of-service at these intersections is reasonably good. By the year 2030, some degradation is expected to occur with or without the project, especially at the intersection of Kapiolani Boulevard and Ward Avenue.

Based on extensive experience in assessing traffic-related air quality impacts, traffic volume increases of less than about 5 percent or less than about 100 vehicles per hour and traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided. The project traffic study indicates that future (2030) traffic approach volumes at some intersections in the project area could exceed 10,000 vehicles per hour and level-of-service could be poor. While this suggests

that “hot spot” areas could occur where the maintenance of air quality standards could be jeopardized, the very small amount of project traffic would not contribute to this significantly. Considering the small project-related traffic volumes that are expected, traffic from the proposed project should have no measurable long-term impacts on air pollution levels in the project area. Although a detailed air quality modeling study could be performed to quantitatively predict project impacts, such an analysis is probably unwarranted.

In summary, short-term impacts from fugitive dust during project construction may potentially occur. Because of this, an effective dust control plan for the period of construction should be prepared and implemented. After construction, any long-term impacts on air quality from motor vehicle traffic related to this project will likely be negligible.

Please call me if you have any questions concerning the information presented herein or if you wish to discuss this matter further.

Very truly yours,

Barry D. Neal
Certified Consulting
Meteorologist

Appendix G
NOISE IMPACT ASSESSMENT

Y. Ebisu & Associates
Acoustical and Electronic Engineers

1126 12th Ave., Room 305
Honolulu, Hawaii 96816
Ph. (808) 735-1634 – Fax (808) 732-0409
e-mail: ebisuyassoc@aol.com

December 10, 2010
YEA Job #48.034

Group 70 International, Inc.
925 Bethel Street, Fifth Floor
Honolulu, Hawaii 96813

Attention: Ms. Christine M. Ruotola, ACIP, LEED AP

Subject: Noise Study for the McKinley High School Athletic Complex Master Plan

Dear Ms. Ruotola:

In accordance with your request, evaluations of the potential noise impacts associated with the subject master plan (see Enclosure 1) were performed. Evaluations of potential traffic noise impacts were performed through the use of the U.S. Federal Highway Administration Traffic Noise Model (FHWA TNM) Version 2.5 [FHWA Highway Traffic Noise Model User's Guide; FHWA-PD-96-009, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004)]. Comparisons of the increases in traffic noise levels with and without the athletic complex in year 2030 were used to evaluate risks of potential adverse traffic noise impacts from the athletic complex. Evaluations of potential noise impacts associated with activities at the planned facilities of the athletic complex were also made by examining surrounding land uses and by comparing existing activities against the planned activities at the athletic complex. Potential construction noise impacts were also described, with noise mitigation measures also provided.

Traffic Noise Impacts. Existing (2010) and future (2030) traffic noise levels were estimated along the streets which are expected to service the athletic complex using traffic data (Enclosure 2) developed for the project (11/23/10 email from Group 70 International, Inc.). The calculated traffic noise levels are shown in Enclosures 3, 4, and 5 for the existing, future (without project), and future (with project) scenarios at distances of 50, 100, and 150 feet from the centerlines of the streets servicing the project. Based on the results shown in Enclosure 3, existing traffic noise levels at residences along Kapiolani Boulevard, Pensacola Street, Piikoi Street, and Ward Avenue currently exceed the 66 Leq threshold that is used by the State Department of Transportation, Highways Division, for identifying potential traffic noise impacts (Noise Analysis and Abatement Policy; Hawaii State Department of Transportation, Highways Division, Materials Testing and Research Branch; June 1997). In addition, by 2030,

future traffic noise levels are expected to increase by 1.7 to 3.6 dB along the streets in the project environs, with or without the athletic complex. Enclosure 6 presents the predicted increases in future traffic noise levels by 2030 with and without the proposed athletic complex. As shown in Enclosure 6, the predicted increases in future traffic noise levels associated with planned athletic complex are very small (less than 0.40 dB), and will be very difficult to measure or perceive over the 20 year period between 2010 and 2030. Therefore, it was concluded that the proposed athletic complex would not cause any measurable or perceivable increases in future traffic noise levels in the project environs, and, therefore, future traffic noise impacts should not occur as a result of the proposed athletic complex.

Noise Impacts from On-Site Facilities. The on-site facilities located on the Conceptual Master Plan (see Enclosure 1) represent potential concentrations of high level noise emitters in the form of crowd noise during sport events which will occur at these facilities. Typical sound levels in the spectator areas from crowd noise are in the 85 to 95 dBA range, and are characterized as being intermittent rather than continuous. The crowd noise levels during sports events which are held indoors (volleyball, basketball, judo, etc.) can be attenuated by the enclosing facility (such as the gymnasium), but the crowd noise levels during outdoor sports events (football, baseball, softball, soccer, tennis, etc.) are not attenuated. In addition, any outdoor public address system could emit high levels of sound from the speakers which are located at the outdoor sports facility.

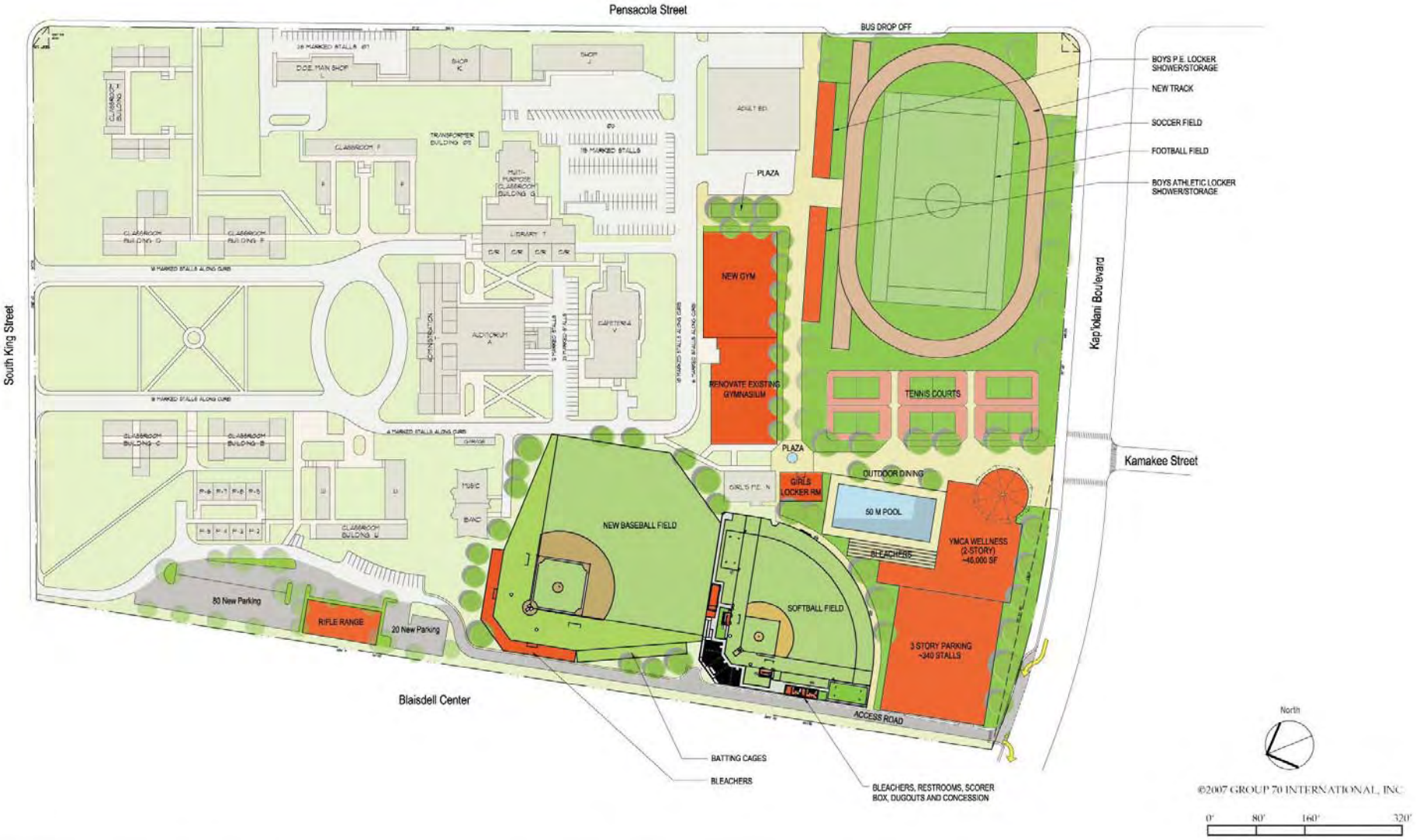
The outdoor and indoor sports events which will occur at the new McKinley High School Athletic Complex will be essentially the same as those which occur prior to the completion of the new complex. The only exception is the scheduling of the Oahu Interscholastic League softball playoffs at the new softball stadium during the month of May. Approximately 12 to 16 softball games will be held at the new softball stadium, with approximately 50 to 500 attendees per game. Game times will be weekdays and Saturdays from 3:00 to 9:00 pm. The closest residences to the new softball stadium will be located at a high rise condominium which is presently under construction approximately 400 feet south of the new softball stadium. Predicted maximum crowd noise levels at 400 feet are in the 65 to 70 dBA range which are not significantly different from the fluctuating levels of traffic noise along Kapiolani Boulevard. The next closest residences are located approximately 1,000 feet from the new softball stadium at a high rise condominium at the corner of Kapiolani Boulevard and Pensacola Street. Predicted maximum crowd noise levels at 1,000 feet are in the 55 to 60 dBA range, which are probably less than the fluctuating levels of traffic noise along Kapiolani Boulevard and Pensacola Street. From the above considerations and evaluations, it was concluded that risks of adverse noise impacts from the new athletic complex should be low, and should not be significantly different from current conditions.

Construction Noise Impacts: The potential for adverse noise impacts from short term construction activities exist, particular during school classroom hours when construction activities typically occur. Fortunately the majority of the new athletic complex facilities are located away from the classroom buildings on the McKinley High School campus, and are grouped together on the Kapiolani Boulevard side of the campus. Typical buffer distances of 100 feet or more should be available between the work sites and the classroom building. Construction noise levels are typically highest during the earthwork (trenching, grading, etc.) phase, and are typically between 85 to 75 dBA at 100 feet (see Enclosure 7). The use of sound attenuating barriers between the construction sites and the classroom buildings may be used where close-in work is necessary during classroom hours. The use of properly muffled construction equipment, the use of equipment staging and material storage areas away from classroom buildings and noise sensitive neighbors, and the scheduling of very noisy activities to after school hours or on Saturdays are possible noise mitigation measures. In addition, the use of broadband back up alarms rather than high frequency beeper type backup alarms by construction equipment is also recommended, since the broadband alarms are less audible at the longer distances from the operating equipment.

Sincerely,

Yoichi Ebisu, P.E.

encl.



McKinley High School
Athletic Complex Master Plan

Conceptual Master Plan

Enclosure 1

GROUP 70 INTERNATIONAL

10 November 2010

ENCLOSURE 2

SUMMARY OF BASE YEAR AND FUTURE YEAR TRAFFIC VOLUMES IN MCKINLEY HIGH SCHOOL ENVIRONS

ROADWAY LANES	**** CY 2010 ***** AM VPH	PM VPH	CY 2030 (NO BUILD) AM VPH	PM VPH	CY 2030 (BUILD) AM VPH	PM VPH
South King St., West of South St. (EB)	2,137	1,968	3,268	2,953	3,276	2,970
South King St., East of South St. (EB)	2,044	2,570	3,321	3,931	3,329	3,948
Kapiolani Blvd., West of South St. (EB)	607	809	1,055	1,288	1,055	1,288
Kapiolani Blvd., East of South St. (WB)	742	1,017	1,005	1,279	1,011	1,290
Kapiolani Blvd., East of South St. (EB)	635	860	1,129	1,422	1,129	1,422
Two-Way	1,377	1,877	2,134	2,701	2,140	2,712
Kapiolani Blvd., West of Ward Ave. (WB)	1,283	1,210	2,227	2,195	2,233	2,209
Kapiolani Blvd., West of Ward Ave. (EB)	486	873	921	1,507	921	1,507
Two-Way	1,769	2,083	3,148	3,702	3,154	3,716
Kapiolani Blvd., Between South St. and Ward Ave. (WB)	1,013	1,114	1,616	1,737	1,622	1,750
Kapiolani Blvd., Between South St. and Ward Ave. (EB)	561	867	1,025	1,465	1,025	1,465
Two-Way	1,573	1,980	2,641	3,202	2,647	3,214
Kapiolani Blvd., East of Ward Ave. (WB)	1,432	1,143	2,513	2,031	2,530	2,065
Kapiolani Blvd., East of Ward Ave. (EB)	569	1,109	1,058	1,848	1,058	1,848
Two-Way	2,001	2,252	3,571	3,879	3,588	3,913
Kapiolani Blvd., West of Access Rd. (WB)	1,533	1,072	2,665	1,983	2,708	2,073
Kapiolani Blvd., West of Access Rd. (EB)	569	1,109	1,058	1,848	1,058	1,848
Two-Way	2,102	2,181	3,723	3,831	3,766	3,921
Kapiolani Blvd., Between Ward Ave. and Access Rd. (WB)	1,493	1,108	2,589	2,007	2,619	2,069
Kapiolani Blvd., Between Ward Ave. and Access Rd. (EB)	559	1,109	1,058	1,848	1,058	1,848
Two-Way	2,052	2,217	3,647	3,855	3,677	3,917
Kapiolani Blvd., East of Access Rd. (WB)	1,533	1,072	2,665	1,983	2,717	2,095
Kapiolani Blvd., East of Access Rd. (EB)	569	1,109	1,058	1,848	1,058	1,848
Two-Way	2,102	2,181	3,723	3,931	3,775	3,943
Kapiolani Blvd., West of Kamakee St. (WB)	1,591	922	2,920	1,718	2,941	1,763
Kapiolani Blvd., West of Kamakee St. (EB)	633	1,378	1,142	2,421	1,142	2,421
Two-Way	2,224	2,300	4,062	4,139	4,083	4,184
Kapiolani Blvd., Between Access Rd. and Kamakee St. (WB)	1,562	997	2,793	1,851	2,829	2,094
Kapiolani Blvd., Between Access Rd. and Kamakee St. (EB)	886	1,244	1,100	2,135	1,642	2,143
Two-Way	2,448	2,241	3,893	3,985	4,471	4,236
Kapiolani Blvd., East of Kamakee St. (WB)	1,533	1,072	2,665	1,983	2,891	2,039
Kapiolani Blvd., East of Kamakee St. (EB)	614	1,230	1,143	2,081	1,143	2,081
Two-Way	2,147	2,302	3,808	4,064	3,834	4,120
Kapiolani Blvd., West of Pensacola St. (WB)	1,627	1,080	2,900	2,042	2,921	2,087
Kapiolani Blvd., West of Pensacola St. (EB)	592	1,218	1,070	2,201	1,070	2,201
Two-Way	2,219	2,298	3,970	4,243	3,991	4,288
Kapiolani Blvd., Between Kamakee St. and Pensacola St. (WB)	1,580	1,076	2,783	2,013	2,806	2,063
Kapiolani Blvd., Between Kamakee St. and Pensacola St. (EB)	603	1,224	1,107	2,141	1,107	2,141
Two-Way	2,183	2,300	3,889	4,154	3,913	4,204

ENCLOSURE 2 (CONTINUED)

SUMMARY OF BASE YEAR AND FUTURE YEAR TRAFFIC VOLUMES IN MCKINLEY HIGH SCHOOL ENVIRONS

ROADWAY LANES	**** CY 2010 ***** AM VPH	PM VPH	CY 2030 (NO BUILD) AM VPH	PM VPH	CY 2030 (BUILD) AM VPH	PM VPH
Kapiolani Blvd., East of Pensacola St. (WB)	1,340	843	2,371	1,493	2,376	1,509
Kapiolani Blvd., East of Pensacola St. (EB)	625	1,230	1,144	2,274	1,144	2,274
Two-Way	1,965	2,073	3,515	3,767	3,520	3,777
Kapiolani Blvd., West of Piikoi St. (WB)	1,429	631	2,505	1,203	2,510	1,213
Kapiolani Blvd., West of Piikoi St. (EB)	600	1,285	1,133	2,376	1,133	2,376
Two-Way	2,029	1,916	3,638	3,579	3,643	3,589
Kapiolani Blvd., Between Pensacola St. and Piikoi St. (WB)	1,385	737	2,438	1,348	2,443	1,358
Kapiolani Blvd., Between Pensacola St. and Piikoi St. (EB)	613	1,258	1,139	2,325	1,139	2,325
Two-Way	1,997	1,995	3,577	3,673	3,582	3,683
Kapiolani Blvd., East of Piikoi St. (WB)	1,590	929	2,732	1,791	2,737	1,801
Kapiolani Blvd., East of Piikoi St. (EB)	597	1,328	1,125	2,508	1,125	2,508
Two-Way	2,187	2,257	3,857	4,299	3,862	4,309
South St., North of South King St. (NB)	1,498	1,484	2,118	2,812	2,124	2,823
South St., South of South King St. (NB)	1,403	2,086	2,171	3,790	2,177	3,801
South St., North of Kapiolani Blvd. (NB)	1,402	2,347	2,171	3,790	2,177	3,801
South St., South of Kapiolani Blvd. (NB)	538	1,381	1,240	2,645	1,240	2,645
Ward Ave., North of Kapiolani Blvd. (NB)	454	911	1,001	2,249	1,010	2,269
Ward Ave., North of Kapiolani Blvd. (SB)	995	974	2,440	1,942	2,442	1,946
Two-Way	1,449	1,885	3,441	4,191	3,452	4,215
Ward Ave., South of Kapiolani Blvd. (NB)	496	1,011	1,060	2,478	1,060	2,478
Ward Ave., South of Kapiolani Blvd. (SB)	1,103	771	2,648	1,666	2,652	1,670
Two-Way	1,599	1,782	3,708	4,144	3,712	4,148
Kamakee St., South of Kapiolani Blvd. (NB)	148	360	268	734	273	745
Kamakee St., South of Kapiolani Blvd. (SB)	187	62	524	129	524	129
Two-Way	335	422	792	863	797	874
Pensacola St., North of Kapiolani Blvd. (SB)	1,135	1,389	1,994	2,389	2,010	2,403
Pensacola St., South of Kapiolani Blvd. (SB)	815	1,139	1,391	1,786	1,391	1,786
Piikoi St., North of Kapiolani Blvd. (NB)	1,019	1,620	1,351	2,591	1,351	2,591
Piikoi St., South of Kapiolani Blvd. (NB)	977	1,489	1,286	2,276	1,286	2,276
Piikoi St., South of Kapiolani Blvd. (SB)	122	115	170	141	170	141
	1,099	1,604	1,456	2,417	1,456	2,417

NOTES:
1. "No Build" Represents Conditions without McKinley High School Master Plan
2. "Build" Represents Conditions with McKinley High School Master Plan Improvements.

ENCLOSURE 3

EXISTING (CY 2010) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF KAPIOLANI BOULEVARD (PM PEAK HOUR)

LOCATION	SPEED (MPH)	TOTAL VPH	********* VOLUMES (VPH) ********** AUTOS	M TRUCKS	H TRUCKS	50' Leq	100' Leq	150' Leq
South King St., West of South St.	30	1,968	1,880	39	49	67.0	62.3	60.0
South King St., East of South St.	35	2,570	2,455	51	64	69.6	64.8	62.5
Kapiolani Blvd., West of South St.	30	809	773	16	20	63.7	59.0	56.6
Kapiolani Blvd., Between South St. and Ward Ave.	35	1,980	1,890	40	50	69.1	64.3	61.9
Kapiolani Blvd., Between Ward Ave. and Access Rd.	30	2,217	2,118	44	55	68.1	63.4	61.0
Kapiolani Blvd., Between Access Rd. and Kamakee St.	30	2,241	2,140	45	56	68.2	63.4	61.1
Kapiolani Blvd., Between Kamakee St. and Pensacola St.	30	2,300	2,196	46	58	68.3	63.6	61.2
Kapiolani Blvd., Between Pensacola St. and Piikoi St.	30	1,995	1,905	40	50	67.7	62.9	60.6
Kapiolani Blvd., East of Piikoi St.	35	2,257	2,156	45	56	69.6	64.8	62.5
South St., North of South King St.	30	1,484	1,417	30	37	65.8	61.1	58.8
South St., South of South King St.	30	2,086	2,002	42	42	66.9	62.3	59.9
South St., North of Kapiolani Blvd.	30	2,347	2,253	47	47	67.3	62.6	60.3
South St., South of Kapiolani Blvd.	30	1,381	1,325	28	28	65.2	60.5	58.0
Ward Ave., North of Kapiolani Blvd.	35	1,885	1,809	38	38	68.0	63.3	60.9
Ward Ave., South of Kapiolani Blvd.	20	1,782	1,710	36	36	64.0	59.6	57.4
Kamakee St., South of Kapiolani Blvd.	30	422	408	8	6	59.0	53.9	50.9
Pensacola St., North of Kapiolani Blvd.	35	1,388	1,332	28	28	66.7	61.9	59.5
Pensacola St., South of Kapiolani Blvd.	30	1,139	1,093	23	23	63.7	58.7	55.7
Piikoi St., North of Kapiolani Blvd.	35	1,629	1,563	33	33	67.4	62.6	60.2
Piikoi St., South of Kapiolani Blvd.	30	1,604	1,540	32	32	66.9	61.8	59.4

ENCLOSURE 4

FUTURE (CY 2030) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF KAPIOLANI BOULEVARD (PM PEAK HOUR; UNDER NO BUILD ALTERNATIVE)

LOCATION	SPEED (MPH)	TOTAL VPH	********* VOLUMES (VPH) ********** AUTOS	M TRUCKS	H TRUCKS	50' Leq	100' Leq	150' Leq
South King St., West of South St.	30	2,953	2,820	59	74	68.7	64.1	61.8
South King St., East of South St.	35	3,931	3,754	79	98	71.4	66.7	64.3
Kapiolani Blvd., West of South St.	30	1,288	1,230	26	32	65.8	61.0	58.7
Kapiolani Blvd., Between South St. and Ward Ave.	35	3,202	3,058	64	80	71.2	66.3	64.0
Kapiolani Blvd., Between Ward Ave. and Access Rd.	30	3,855	3,682	77	96	70.5	65.8	63.4
Kapiolani Blvd., Between Access Rd. and Kamakee St.	30	3,985	3,805	80	100	70.7	65.9	63.6
Kapiolani Blvd., Between Kamakee St. and Pensacola St.	30	4,154	3,967	83	104	70.9	66.1	63.0
Kapiolani Blvd., Between Pensacola St. and Piikoi St.	30	3,673	3,508	73	92	70.3	65.6	63.2
Kapiolani Blvd., East of Piikoi St.	35	4,299	4,106	86	107	72.5	67.6	65.3
South St., North of South King St.	30	2,812	2,686	56	70	68.5	63.9	61.5
South St., South of South King St.	30	3,790	3,638	76	76	69.5	64.9	62.5
South St., North of Kapiolani Blvd.	30	3,790	3,638	76	76	69.5	64.9	62.5
South St., South of Kapiolani Blvd.	30	2,645	2,539	53	53	68.0	63.3	61.0
Ward Ave., North of Kapiolani Blvd.	35	4,191	4,023	84	84	71.5	66.7	64.3
Ward Ave., South of Kapiolani Blvd.	20	4,144	3,978	83	83	67.6	63.2	61.0
Kamakee St., South of Kapiolani Blvd.	30	863	833	17	13	62.2	57.1	54.1
Pensacola St., North of Kapiolani Blvd.	35	2,388	2,292	48	48	69.0	64.3	61.9
Pensacola St., South of Kapiolani Blvd.	30	1,766	1,696	35	35	65.6	60.5	57.6
Piikoi St., North of Kapiolani Blvd.	35	2,591	2,487	52	52	69.4	64.6	62.3
Piikoi St., South of Kapiolani Blvd.	30	2,417	2,321	48	48	68.6	63.6	61.2

ENCLOSURE 5

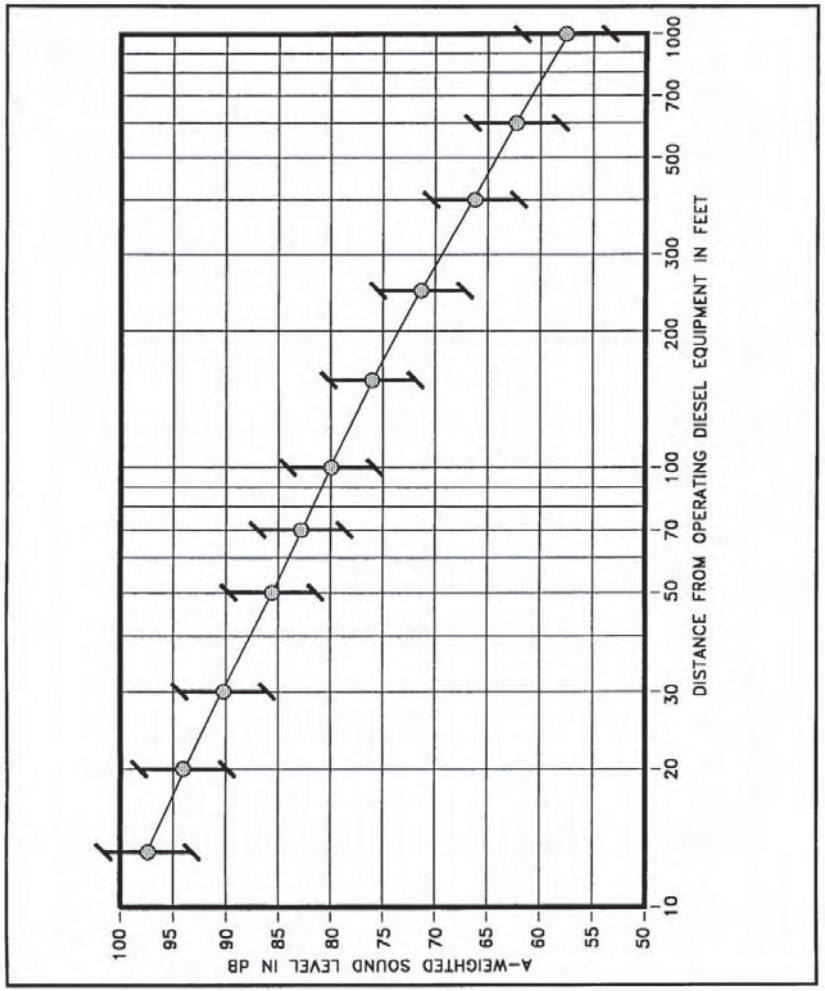
FUTURE (CY 2030) TRAFFIC VOLUMES AND NOISE LEVELS ALONG VARIOUS SECTIONS OF KAPIOLANI BOULEVARD (PM PEAK HOUR; UNDER BUILD ALTERNATIVE)

LOCATION	SPEED (MPH)	TOTAL VPH	********* VOLUMES (VPH) ********** AUTOS	M TRUCKS	H TRUCKS	50' Leq	100' Leq	150' Leq
South King St., West of South St.	30	2,970	2,837	59	74	68.7	64.1	61.8
South King St., East of South St.	35	3,948	3,770	79	99	71.4	66.7	64.3
Kapiolani Blvd., West of South St.	30	1,288	1,230	26	32	65.8	61.0	58.7
Kapiolani Blvd., Between South St. and Ward Ave.	35	3,214	3,070	64	80	71.2	66.4	64.0
Kapiolani Blvd., Between Ward Ave. and Access Rd.	30	3,917	3,741	78	98	70.6	65.8	63.5
Kapiolani Blvd., Between Access Rd. and Kamakee St.	30	4,236	4,045	85	106	71.0	66.2	63.9
Kapiolani Blvd., Between Kamakee St. and Pensacola St.	30	4,204	4,015	84	105	70.9	66.1	63.8
Kapiolani Blvd., Between Pensacola St. and Piikoi St.	30	3,683	3,517	74	92	70.3	65.6	63.2
Kapiolani Blvd., East of Piikoi St.	35	4,309	4,115	86	108	72.5	67.6	65.3
South St., North of South King St.	30	2,823	2,696	56	71	68.5	63.9	61.6
South St., South of South King St.	30	3,801	3,649	76	76	69.5	64.9	62.5
South St., North of Kapiolani Blvd.	30	3,801	3,649	76	76	69.5	64.9	62.5
South St., South of Kapiolani Blvd.	30	2,645	2,539	53	53	68.0	63.3	61.0
Ward Ave., North of Kapiolani Blvd.	35	4,215	4,047	84	84	71.5	66.8	64.4
Ward Ave., South of Kapiolani Blvd.	20	4,148	3,982	83	83	67.6	63.2	61.0
Kamakee St., South of Kapiolani Blvd.	30	874	844	17	13	62.2	57.1	54.1
Pensacola St., North of Kapiolani Blvd.	35	2,423	2,327	48	48	69.1	64.3	61.9
Pensacola St., South of Kapiolani Blvd.	30	1,766	1,696	35	35	65.6	60.5	57.6
Piikoi St., North of Kapiolani Blvd.	35	2,591	2,487	52	52	69.4	64.6	62.3
Piikoi St., South of Kapiolani Blvd.	30	2,417	2,321	48	48	68.6	63.6	61.2

ENCLOSURE 6

CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS (CY 2030) (PM PEAK HOUR)

H-1 FREEWAY SECTION	NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC	PROJECT TRAFFIC
South King St., West of South St.	1.70	0.00
South King St., East of South St.	1.80	0.00
Kapiolani Blvd., West of South St.	2.10	0.00
Kapiolani Blvd., Between South St. and Ward Ave.	2.10	0.00
Kapiolani Blvd., Between Ward Ave. and Access Rd.	2.40	0.10
Kapiolani Blvd., Between Access Rd. and Kamakee St.	2.50	0.30
Kapiolani Blvd., Between Kamakee St. and Pensacola St.	2.60	0.00
Kapiolani Blvd., Between Pensacola St. and Piikoi St.	2.60	0.00
Kapiolani Blvd., East of Piikoi St.	2.90	0.00
South St., North of South King St.	2.70	0.00
South St., South of South King St.	2.60	0.00
South St., North of Kapiolani Blvd.	2.20	0.00
South St., South of Kapiolani Blvd.	2.80	0.00
Ward Ave., North of Kapiolani Blvd.	3.50	0.00
Ward Ave., South of Kapiolani Blvd.	3.60	0.00
Kamakee St., South of Kapiolani Blvd.	3.20	0.00
Pensacola St., North of Kapiolani Blvd.	2.30	0.10
Pensacola St., South of Kapiolani Blvd.	1.90	0.00
Piikoi St., North of Kapiolani Blvd.	2.00	0.00
Piikoi St., South of Kapiolani Blvd.	1.70	0.00



NOISE MEASUREMENT LOCATIONS AT BWS KAONOHI WELLS AND BOOSTER PUMP STATION

ENCLOSURE 7

Appendix H
HAZARDOUS MATERIALS

X.X Hazardous Materials

Structures Scheduled for Demolition and/or Renovation

Asbestos

Prior to demolition and/or renovation of existing structures, building materials should be sampled using destructive sampling protocols to collect representative samples for asbestos analysis. Sampling and testing shall follow USEPA and State of Hawaii Department of Health guidelines. Building materials with an asbestos concentration of greater than one percent shall be considered asbestos containing materials and managed per federal and state regulations.

Lead Paint

Prior to demolition and/or renovation of existing structures, building materials should be sampled using destructive sampling protocols to collect representative samples for Toxic Characteristic Leaching Procedure (TCLP) lead analysis. One sample per structure shall be collected. Structures with less than 5.0 mg/kg TCLP lead may be demolished and disposed of in a local, municipal landfill. Structures (or segregated lead paint containing components) with greater than 5.0 mg/kg TCLP lead shall be disposed in regulated hazardous waste management facilities.

Universal Wastes

Prior to demolition and/or renovation of existing structures, buildings should be inventoried for PCB containing light ballasts and mercury containing lamps. PCB containing light ballasts and mercury containing lamps shall be handled per Universal Waste regulations.

Rifle Range – Lead in Soil

Preliminary sampling and testing of surface (0" to 6") soils at the rifle range has confirmed lead present in the soil as high as 249,000 mg/kg (total lead concentration).

Prior to demolition of the rifle range, the soils of the range shall be sampled and tested to determine the vertical and areal extent of lead concentrations to determine if there are levels of total lead above the State of Hawaii Department of Health unrestricted (residential) use level of 200 mg/kg, and/or levels of leachable lead in the soil at or above the toxicity

characteristic (TC) limit of 5.0 mg/kg. Sampling protocols shall adhere to the specifications of the latest edition of the Technical Guidance Manual of the Hazard Evaluation and Emergency Response Office of the State of Hawaii Department of Health.

If sampling results indicate there is impacted soil near or in contact with ground water, monitoring wells shall be installed to evaluate the presence and extent of ground water contamination. If levels of lead in ground water exceed the State of Hawaii ground water standard of 2.9 µg/L, then ground water impact must also be delineated and addressed during site characterization.

In addition to the field work and laboratory analysis, the Site Characterization should include a Work Plan, a Sampling & Analysis Plan and a Site Specific Health & Safety Plan. The estimated budget to complete the Site Characterization is $ 8,500 to $ 11,500.

Upon completion of site characterization of soils and ground water, a Site Remediation Management Plan shall be developed to properly manage the soil and ground water per state and federal regulations and guidelines. Remedial alternatives to address soil contamination may include:

1. Removing the impacted soil offsite for disposal at local and/or mainland disposal facilities.

2. Screening the soil to remove the lead and then recycling the captured material.

3. Capping the soil in place.

4. Removing the soil and capping elsewhere on the property, ie, the tennis courts.

Appendix I
COMMENT LETTERS AND RESPONSES

PRE-CONSULTATION PERIOD COMMENTS AND RESPONSES

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 523-4567
Web site: www.honolulu.gov

KIRK W. CALDWELL
ACTING MAYOR

COLLINS D. LAM, P.E.
ACTING DIRECTOR

DEPUTY DIRECTOR

October 1, 2010

OCT - 6 2010

Mr. Vi Verawudh
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813- 4307

Dear Mr Verawudh:

Subject: Pre-Consultation for Draft Environmental Assessment (DEA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawaii)

Thank you for inviting us to review the Pre- Consultation Draft Assessment. The Department of Design and Construction does not have any comments to offer at this time.

Should you have any questions, please contact me at 768-8481.

Very truly yours,

Collins D. Lam, P.E.
Acting Director

CL:pg(384825)

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James L. Stone
AIA, LEED AP

Paul Bierman-Lytle
M. Arch., AIA, LEED AP

Katherine M. MacNeil
AIA, LEED AP

Tom Young
AIA

January 6, 2011

Collins D. Lam, P.E., Acting Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Lam:

Thank you for your Pre-Consultation comment letter dated October 1, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the Department of Design and Construction has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

DEPARTMENT OF PARKS AND RECREATION

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
Phone: (808) 768-3003 • FAX: 768-3053 • Internet: www.co.honolulu.hi.us

KIRK W. CALDWELL
ACTING MAYOR

LESTER K. C. CHANG
DIRECTOR

RICHARD HARU
DEPUTY DIRECTOR

September 29, 2010

RECEIVED
SEP 30 2010
GROUP 70 INTL

Ms. Vi Verawudh, AICP, LEED-AP
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Ms. Verawudh:

Subject: Pre-Consultation for Draft Environmental Assessment (DEA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawaii)

Thank you for the opportunity to review and comment at the pre-consultation stage of the Draft Environmental Assessment for the McKinley High School Athletic Complex Master Plan.

The Department of Parks and Recreation has no comment at this time as the proposed project will not impact any park and recreational activities in this area. Please keep us informed as it progresses.

Should you have any questions, please contact Mr. John Reid, Planner, at 768-3017.

Sincerely,

LESTER K. C. CHANG
Director

LKCC:jr
(384689)

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Tom Young
AIA

January 6, 2011

Lester K. C. Chang, Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Chang:

Thank you for your Pre-Consultation comment letter dated September 29, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the Department of Parks and Recreation has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

OCT 19 2010

(P)1257.0

OCT 20 2010

Ms. Vi Verawudh
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, HI 96813-4307

Dear Ms. Verawudh:

Subject: Pre-Consultation for Draft Environmental Assessment
McKinley High School Athletic Complex Master Plan
TMK: (1) 2-3-009:001 (por.)
Honolulu, Island of Oahu, Hawaii

Thank you for the opportunity to provide comments for the subject project. The proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

DD:lnn

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January 6, 2011

Ernest Y.W. Lau
Public Works Administrator
State of Hawai'i
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810-0119

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Lau:

Thank you for your Pre-Consultation comment letter dated October 19, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the Department of Accounting and General Services has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD10/5259

RECEIVED
OCT 18 2010

October 12, 2010

Vi Verawudh, AICP, LEED-AP Planner
Group 70 International
925 Bethel Street, 5th Floor
Honolulu, Hawai'i 96813-4307

RE: Pre-draft Environmental Assessment consultation
McKinley High School (MHS) Athletic Complex Master Plan
Honolulu. Island of O'ahu
Tax Map Key: (1) 2-3-009:001

Aloha e Vi Verawudh,

The Office of Hawaiian Affairs (OHA) is in receipt of a September 17, 2010 letter initiating consultation ahead of a draft environmental assessment (DEA) for the proposed MHS Athletic Complex Master Plan project (project). It is our understanding the project will provide MHS students and community residents' access to high standard athletic and wellness facilities. The project will seek a public and private partnership with the YMCA. This will allow MHS to expand its services and facilities to students and the larger community. OHA applauds your efforts to collaborate with the YMCA and to improve the athletic complex that will provide a quality facility for practices, games, and recreation. New facilities and improvements to existing facilities on the MHS campus are proposed.

We have no specific comments at this time. We look forward to the opportunity to review the DEA. Should you have any questions, please contact Kathryn Keala at 594-0272 or Kathyk@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

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Tom Young
AIA

January 6, 2011

Clyde W. Nāmu'o
Chief Executive Officer
State of Hawai'i
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawaii 96813

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Nāmu'o:

Thank you for your Pre-Consultation comment letter dated October 12, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the Office of Hawaiian Affairs has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

November 3, 2010

NOV - 8 2010

Group 70 International, Inc.
925 Bethel Street 5th Floor
Honolulu, Hawaii 96813-4307

Attention: Ms. Vi Verawudh, Planner

Ladies and Gentlemen:

Subject: Pre-Consultation for Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR), Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Land Division-Oahu District, Division of Aquatic Resources, Commission on Water Resource Management, Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Historic Preservation will be submitting comments through a separate letter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

for Russell Y. Tsuji
Administrator

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AIA, LEED AP

Tom Young
AIA

January 6, 2011

Russell Y. Tsuji, Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
1151 Punchbowl Street, Room 220
Honolulu, Hawaii 96813

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Tsuji:

Thank you for your Pre-Consultation comment letter dated September 23, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

Attached are responses to comments from Land Division-O'ahu District, Division of Aquatic Resources, Commission on Water Resources Management, and the Engineering Division.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
SUMNER ERDMAN
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIIKE, M.D., J.D.

LENORE N. OHYE
ACTING DEPUTY DIRECTOR

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LAND DIVISION
2010 OCT 13 A 10: 23
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

October 7, 2010

REF: MHS Athletic Complex Pre-consult DEA.doc

TO: Russell Tsuji, Administrator
Land Division

FROM: Lenore N. Ohye, Acting Deputy Director
Commission on Water Resource Management

SUBJECT: Pre-Consultation for Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan

FILE NO.: N/A
TMK NO.: (1) 2-3-009:001

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☒ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☒ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/pp/index.htm.

☒ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☒ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/resources_permits.htm.

☐ 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water.

☐ 9. A Well Construction Permit(s) is (are) required any well construction work begins.

☐ 10. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 11. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 12. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 13. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.

☐ 14. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.

☐ 15. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☒ 16. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER:
With the addition of approximately 70,000 s.f. of new indoor space, new 50m swimming pool, new YMCA facilities, and a renovated baseball field, we note that this project may have a substantial increase in water demand compared with the current MHS water use. The Draft EA should carefully identify the project water demands, including peak water demands during special athletic events, and identify the source of water to meet these demands. Best management practices should be utilized for water efficiency in both indoor and outdoor water uses. Stormwater management BMPs should be utilized to minimize stormwater runoff and its impacts.

If there are any questions, please contact Neal Fujii at 587-0264.

GROUP 70
INTERNATIONAL

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AIA, LEED AP

Tom Young
AIA

January 6, 2011

Lenore N. Ohye, Acting Deputy Director
DLNR Commission on Water Resource Management
P.O. Box 621
Honolulu, HI 96809

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Ms. Ohye:

Thank you for your Pre-Consultation comment letter dated October 13, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

In response to your comments, a preliminary water calculation and discussion of water source will be discussed in the Draft EA. The Honolulu Board of Water Supply has indicated that the water system is presently adequate to accommodate the proposed project. The DOE team will coordinate with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

This project will incorporate water efficient technology and design, and appropriate vegetation and landscaping to moderate water irrigation demands. Non-potable water sources will also be investigated for irrigation use. Best Management Practices (BMP) to minimize infiltration and runoff will be incorporated and implemented to minimize the impact of the project to the existing area's hydrology.

The proposed new gymnasium will achieve US Green Building Council's Leadership in Energy and Environmental Design (LEED) for New Construction Silver rating. As such, the project will be designed to minimize environmental impacts and ensure that development is done in a sustainable manner.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

CC: Russell Tsuji, Administrator DLNR Land Division

Group 70 International • 925 Bethel Street, 5th Floor • Honolulu, HI 96813-4307 • tel. 808.523.5866 • fax. 808.523.5874 • www.group70int.com

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 22, 2010

2010 SEP 23 AM 10:33 ENGINEERING
RECEIVED
LAND DIVISION

2010 OCT 14 P 2:51
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
~~Div. of Boating~~ & Ocean Recreation
x Engineering Division
~~Div. of Forestry~~ & Wildlife
Div. of State Parks
x Commission on Water Resource Management
Office of Conservation & Coastal Lands
x Land Division –Oahu District/Gary Martin

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Consultation for Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan
LOCATION: Island of Oahu
APPLICANT: Group 70 International on behalf of Department of Education

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 28, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed:
Date: 10/13/10

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/ Charlene Unoki
REF: Pre-Consultation for DEA for McKinley HS Athletic Complex Master Plan Oahu.018

COMMENTS

(X) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zones A and X. The National Flood Insurance Program regulates developments within Zone A, as indicated in bold letters below, but not within Zone X.

( ) Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) Please note that the project site must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

(X) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

(X) The applicant should include water demands and infrastructure required to meet project needs. Please note that projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed:
CARTY S. CHANG, CHIEF ENGINEER
Date: 10/13/10

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AIA, LEED AP

Tom Young
AIA

January 6, 2011

Carty Chang, Chief Engineer, Engineering Division
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Mr. Chang:

Thank you for your Pre-Consultation comment letter dated October 14, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

In response to your comment, a preliminary water calculation and required infrastructure to support the project will be discussed in the Draft EA. We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola

Christine M. Ruotola, AICP, LEED AP
Principal Planner

CC: Russell Tsuji, Administrator DLNR Land Division

Group 70 International • 925 Bethel Street, 5th Floor • Honolulu, HI 96813-4307 • tel. 808.523.5866 • fax. 808.523.5874 • www.group70int.com

LD

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
LAND DIVISION
2010 OCT 21 A 11:42
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 22, 2010

DAR 3364
GCH

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division –Oahu District/Gary Martin

RECEIVED
SEP 23 2010
AQUATIC RESOURCES

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Consultation for Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan
LOCATION: Island of Oahu
APPLICANT: Group 70 International on behalf of Department of Education

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 28, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

RECEIVED
2010 OCT 19 AM 8:0
DIV OF AQUATIC RESOURCES
HILO, HAWAI'I

( ) We have no objections.
(X) We have no comments.
( ) Comments are attached.

Signed:
Date: 19 OCT 2010

GROUP 70
INTERNATIONAL

January 6, 2011

PRINCIPALS

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Tom Young
AIA

Robert Nishimoto
State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
1151 Punchbowl Street, Room 330
Honolulu, Hawaii 96813

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Nishimoto:

Thank you for your Pre-Consultation comment letter dated October 19, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the DLNR Division of Aquatic Resources has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola, AICP
Principal

CC: Russell Tsuji, Administrator DLNR Land Division

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 22, 2010

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
__Office of Conservation & Coastal Lands
x Land Division –Oahu District/Gary Martin

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Consultation for Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan
LOCATION: Island of Oahu
APPLICANT: Group 70 International on behalf of Department of Education

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 28, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: T. Chee
Date: 9/23/2010

GROUP 70 INTERNATIONAL

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Tom Young
AIA

January 6, 2011

Gary Martin
State of Hawaii
Department of Land and Natural Resources
Land Division
1151 Punchbowl Street, Room 220
Honolulu, Hawaii 96813

Subject: Pre-Consultation for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
(Honolulu, Oahu, Hawai'i)

Dear Mr. Martin:

Thank you for your Pre-Consultation comment letter dated September 23, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge that the DLNR Land Division has no comments on the subject matter at this time.

Upon completion, we will be providing your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola

Christine Mendes Ruotola, AICP
Principal

CC: Russell Tsuji, Administrator DLNR Land Division

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

October 19, 2010

PETER B. CARLISLE, MAYOR

RANDALL Y. S. CHUNG, Chairman
WILLIAM K. MAHOE
THERESIA C. McMURDO
ADAM C. WONG

JEOFFREY S. CUDIAMAT, Ex-Officio
MICHAEL D. FORMBY, Ex-Officio

WAYNE M. HASHIRO, P.E.
Manager and Chief Engineer

DEAN A. NAKANO
Deputy Manager

Mr. Vi Verawudh
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii, 96813-4307

Dear Mr. Verawudh:

Subject: Letter Dated September 17, 2010 Requesting Comments on the Draft Environmental Assessment for McKinley High School Athletic Complex Master Plan, TMK: 2-3-009: por. 001

Thank you for the opportunity to comment on the proposed Athletic Complex Master Plan.

The existing water system is presently adequate to accommodate the proposed domestic water requirements of the proposed McKinley High School athletic facilities. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

The developer should investigate the availability and use of non-potable water for irrigation of the proposed large landscaped areas. If non-potable water is not available or its use is not feasible, a report of the investigation should be submitted to us before we will consider the use of potable water.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

PAUL S. KIKUCHI
Chief Financial Officer
Customer Care Division

Water for Life . . . Ka Wai Ola

GROUP 70 INTERNATIONAL

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AIA, LEED AP

Tom Young
AIA

January 6, 2011

Mr. Paul S. Kikuchi, Chief Financial Officer
Board of Water Supply
630 South Beretania Street
Honolulu, HI 96843

Subject: Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Mr. Kikuchi:

Thank you for your Pre-Consultation comment letter dated October 19, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge your comments that the existing water system is presently adequate to accommodate the proposed project; however, water availability will be confirmed when the building permit application is submitted for approval. The availability and use of non-potable water for irrigation will be investigated. In the case that non-potable water is not available or its use is not feasible, an investigation report will be submitted to your department.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

PETER B. CARLISLE
MAYOR

WAYNE Y. YOSHIOKA
ACTING DIRECTOR

SHARON ANN THOM
DEPUTY DIRECTOR

KENNETH TORU HAMAYASU, P.E.
SECOND DEPUTY DIRECTOR

OCT 26 2010
GROUP 70 INT'L

October 22, 2010

TP9/10-384713R

Ms. Vi Verawudh
Planner
Group 70 International
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Ms. Verawudh:

Subject: Pre-Consultation for Draft Environmental Assessment (DEA) McKinley High School Athletic Complex Master Plan (Honolulu, Oahu, Hawaii)

This responds to your letter of September 17, 2010, requesting our comments concerning this proposed project.

Our Traffic Engineering Division (TED) has the following comments:

- The Draft EA should discuss transportation impacts, including short term impacts during construction and proposed mitigation measures.
- Driveway connections should utilize existing driveway connections and/or traffic signals. Existing traffic signals should be provided with interconnect hardware to be coordinated with the King Street progression.
- The area Neighborhood Board, as well as the area residents, businesses, etc. should be kept apprised of the details for the proposed project and the impacts the project may have on the adjoining local street network area.

Our Public Transit Division (PTD) has the following comments:

- The Draft EA should include a description of Public Transit and the impact of your project on Public Transit during construction and as a result of population. Basic information is available on our websites: www.thebus.org and www.honolulu.gov/dts. For more details you may contact the PTD staff at 768-8370.

- Construction notes should include the following note concerning transit:

  "This project will affect bus routes, bus stops, and paratransit operations, therefore, the Contractor shall notify the Department of Transportation Services, Public Transit Division at 768-8396 and Oahu Transit Services, Inc. (bus operations: 848-4578 or 852-6016 and paratransit operations: 454-5041 or 454-5020) of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project at least two weeks prior to construction."

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

WAYNE Y. YOSHIOKA
Acting Director

GROUP 70
INTERNATIONAL

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Katherine M. MacNeil
AIA, LEED AP

Tom Young
AIA

January 6, 2011

Wayne Y. Yoshioka, Acting Director
City and County of Honolulu
Department of Transportation Services
650 S. King Street, 3rd Floor
Honolulu, HI 96813

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, Oʻahu, Hawaiʻi
TMK: (1) 2-3-009:001 (por.)

Dear Mr. Yoshioka:

Thank you for your Pre-Consultation comment letter dated October 22, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

In response to your comments:

1. Transportation impacts, including construction period impacts and mitigation measures will be discussed and evaluated in the Draft EA.
2. Existing driveway connections and/or traffic signal will be utilized; no new driveway connections are being proposed.
3. The area Neighborhood Board and residents will be kept appraised of the details for the proposed project and the impacts the project may have on the adjoining local street network area.
4. A description of Public Transit and the impact of the project on Public Transit during construction and as a result of population impacts will be included in the Draft EA.
5. The recommended construction notes concerning transit will be included in the construction documents.

We will provide your office with a copy of the Draft EA. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

Group 70 International • 925 Bethel Street, 5th Floor • Honolulu, HI 96813-4307 • tel. 808.523.5866 • fax. 808.523.5874 • www.group70int.com

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK W. CALDWELL
ACTING MAYOR

KENNETH G. SILVA
FIRE CHIEF

ROLLAND J. HARVEST
DEPUTY FIRE CHIEF

October 5, 2010

RECEIVED
OCT 12 2010

Ms. Vi Verawudh, AICP, LEED-AP
Planner
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Ms. Verawudh:

Subject: Preconsultation for Draft Environmental Assessment
McKinley High School Athletic Complex Master Plan
Tax Map Key: 2-3-009: 001 (Portion)

In response to your letter of September 17, 2010, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; Uniform Fire Code [UFC]™, 2006 Edition, Section 18.2.3.2.2.)

   A fire department access road shall extend to within 50 ft (15 m) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; UFC™, 2006 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of

the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; UFC™, 2006 Edition, Section 18.3.1, as amended.)

3. Submit civil drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,

KENNETH G. SILVA
Fire Chief

KGS/SY:bh

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Tom Young
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January 6, 2011

Fire Chief Kenneth G. Silva
Honolulu Fire Department
636 South Street
Honolulu, HI 96813

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Chief Silva:

Thank you for your Pre-Consultation comment letter dated October 5, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

In response to your comments, the proposed project will comply with the applicable National Fire Protection Association (NFPA) 1; Uniform Fire Code (UFC), 2006 Edition. Civil drawings will be submitted to the Honolulu Fire Department for review and approval during building permitting period.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

Group 70 International • 925 Bethel Street, 5th Floor • Honolulu, HI 96813-4307 • tel. 808.523.5866 • fax. 808.523.5874 • www.group70int.com

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

LOUIS M. KEALOHA
CHIEF

DELBERT T. TATSUYAMA
RANDAL K. MACADANGDANG
DEPUTY CHIEFS

SEP 24 2010
GROUP 70 INT'L

OUR REFERENCE DMK-LKA

September 23, 2010

Ms. Vi Verawudh, AICP, LEED-AP
Planner
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Ms. Verawudh:

This is in response to your letter of September 17, 2010, requesting comments on a Pre-Consultation for Draft Environmental Assessment for the McKinley High School Athletic Complex Master Plan.

This project may have a negative impact on calls for police services in the area because of dust, noise, and traffic congestion complaints during its construction. However, once completed, there should be no impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Marie McCauley of District 1 at 529-3386.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
DAVE M. KAJIHIRO
Assistant Chief of Police
Support Services Bureau

Serving and Protecting With Aloha

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Tom Young
AIA

January 6, 2011

Louis M. Kealoha, Chief of Police
Honolulu Police Department
801 South Beretania Street
Honolulu, HI 96813

Subject: Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Chief Kealoha:

Thank you for your Pre-Consultation comment letter dated September 23, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

We acknowledge your comments that there may be construction period impacts; however, after the construction period, the proposed project should not impact the facilities or operations of the Honolulu Police Department.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2010-TA-0514

OCT 19 2010

Ms. Vi Verawudh
Planner
Group 70, International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813

Subject: Technical Assistance for the Preparation of McKinley High School Athletic Complex Master Plan Environmental Assessment, Oahu

Dear Ms. Verawudh:

The U.S. Fish and Wildlife Service (Service) received your letter, dated September 17, 2010, in which you requested comments regarding the development of an Environmental Assessment (EA) for the McKinley High School Athletic Complex Master Plan on the island of Oahu. The proposed actions include the construction of a new gymnasium, rifle range, tennis courts, bleachers, batting cages, a YMCA wellness center, and a three-story parking lot. Several existing buildings and infrastructure will be relocated, and a new parking lot will be established. All development of the Athletic Complex will occur on school's 45.7 acre property, which is currently being used for athletic activities [TMK 2-3-009:001]. We offer the following information to assist you in the development of a draft EA for this project.

We have searched our databases, including data compiled by the Hawaii Biodiversity and Mapping Program. To the best of our knowledge, no federally listed or proposed threatened or endangered species, or proposed or designated critical habitats occur within the project footprint. However, seabird species that are protected under the Migratory Bird Treaty Act [16 U.S.C. 703-712], such as the wedge-tailed shearwater (*Puffinus pacificus)*, may be impacted by project lighting.

Outdoor lighting, such as street lights and sport field lights, can adversely impact migratory seabird species. Seabirds fly at night and are attracted to artificially-lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators and are often struck by vehicles along roadways. Wedge-tailed shearwater nesting colonies are located nearby on offshore islets and every year many young shearwaters are downed and killed along existing roadways. Any increase in the use of night-time lighting such as ball fields or parking lot lights, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or

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mortality. Impacts to seabirds can be minimized by shielding outdoor lights associated with the project to the maximum extent possible, eliminating night-time construction, and providing all project staff and residents with information about seabird fallout. All lights, including street lights, should be shielded so the bulb can only be seen from below and use the lowest wattage bulbs possible. The DEA should address all potential impacts to seabirds and outline conservation measures to minimize these impacts.

Hawaii's native ecosystems are heavily impacted by exotic invasive plants. Whenever possible we recommend using native plants for landscaping purposes. If native plants do not meet the landscaping objectives, we recommend choosing species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp) and Global Compendium of Weeds (www.hear.org/gcw).

We hope this information assists you in developing a comprehensive and thorough draft EA. We appreciate your efforts to conserve endangered species. If you have questions regarding these comments, please contact Michelle Bogardus, Consultation and Habitat Conservation Planning Program (phone: 808-792-9400, fax: 808-792-9400).

Sincerely,

Christa Russell

for Loyal Mehrhoff
Field Supervisor

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January 6, 2011

Loyal Mehrhoff, Field Supervisor
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, HI 96850

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Mr. Mehrhoff:

Thank you for your Pre-Consultation comment letter dated October 19, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

To address the concern of seabird fall-out, the design of the school's facility lighting will utilize best practices for night lighting having full cutoff dark night fixtures. All associated lighting will comply with applicable City and County of Honolulu ordinances. There will be no outdoor games scheduled during the peak fallout period (September 15 through December 15). In regards to the concern of exotic invasive plants, native plants will be used to the extent practicable.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

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LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

10007PDCL.10

October 6, 2010

RECEIVED
OCT - 8 2010
GROUP 70 INT'L

Ms. Vi Verawudh
Planner
Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813-4307

Dear Ms. Verawudh:

SUBJECT: Pre-Consultation Comments for Draft Environmental Assessment (DEA) for McKinley High School Athletic Complex Master Plan
Honolulu, Island of Hawaii, Hawaii
TMK: (1) 2-3-009:001 (por.)

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated September 17, 2010, requesting comments on the subject project. We have reviewed your letter and offer these comments on your project. Please note that our review is based solely on the information provided in your letter and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

   b. Hydrotesting effluent.

   You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

3. For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at 586-4309.

Sincerely,

for ALEC WONG, P.E., CHIEF
Clean Water Branch

DCL:ml

c: DOH-EPO # I-3347 [via email only]

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Tom Young
AIA

January 6, 2011

Alec Wong, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, HI 96801

Subject: Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Mr. Wong:

Thank you for your Pre-Consultation comment letter dated October 6, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan.

In response to your comments, the proposed project will comply with the Hawai'i Administrative Rules (HAR) Chapters 11-54 and 11-55. An application for a National Pollution Discharge Elimination System (NPDES) permit for construction activities will be submitted to the State Department of Health for review and approval.

We will provide your office with a copy of the Draft EA for your review. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine M. Ruotola, AICP, LEED AP
Principal Planner

City and County of Honolulu • State of Hawaii

October 27, 2010

Vi Verawudh
Group 70 International, Inc.
925 Bethel Street, 5th floor
Honolulu, Hawaii 96813-4307

RE: Pre-Consultation for Draft Environmental Assessment — McKinley High School Athletic Complex Master Plan

We have reviewed the Project Information Summary for McKinley High School's Draft Environmental Assessment for the Athletic Complex Master Plan and appreciate the opportunity to provide our comments regarding the scope of Group 70's assessment required under Chapter 343, HRS.

First, we strongly support developing additional athletic facilities on the McKinley High School campus, and welcome the opportunity to seek business, community and other private sector partners to fund the components of the Master Plan other than the YMCA's Wellness Center and swimming pool. According to Table 1.5, the total estimated costs for the Athletic Complex are roughly $62.5 million for the balance of the Master Plan facilities (estimate does not include a cost for a new 100-stall parking lot) - which is unlikely to be funded primarily through State Department of Education funds.

We have a number of concerns regarding community impacts that we believe should be thoroughly addressed through the Draft EA process, and request that Department of Education and its Draft EA consultant fully evaluate and provide meaningful solutions to address these impacts.

Traffic and Parking Issues

Over the past four years, area legislators, community stakeholders and residents have discussed solutions involving City/State and private sector partnerships, which should be rigorously evaluated in the master planning process for the Athletic Complex. Examples of potential City/State and private sector solutions include:

- State and City and County of Honolulu joint funding of expansion of the parking capacity at Neal Blaisdell Center (NBC) to address parking needs of McKinley High School's Athletic Complex, as well as of NBC facilities.

- If the City's transit station can be moved closer to the proposed football, baseball and softball stadiums, a transit option could reduce traffic if stadium attendees parked elsewhere and used mass transit to sporting events. This alternative would reduce the number of parking stalls needed to support the McKinley High School Athletic Complex and the City's Neal Blaisdell facilities.

Although the 2010 McKinley High School Athletic Complex Master Plan proposal specifies a smaller size for the replacement track/football field and bleachers (approximately 2,500 seats), the convergence of the full range of facilities (e.g., 500-1,000 seat baseball stadium,

500-1,000 seat softball stadium, six tennis courts, new gymnasium, new PE/athletic lockers and showers) will undoubtedly result in increased student and visitor usage of these facilities.

Therefore, rather than relying on HCDA's parking requirements for a school campus environment — a total of 222 parking stalls for 2,200 students — the Draft EA should evaluate the impacts of increased usage of all new Athletic Complex facilities from existing McKinley High School students and alumni, as well as increased usage by visiting schools and their supporters.

As such, the statements on page 1-9 of the Pre-Consultation notice are not an accurate reflection of current traffic and parking conditions in the neighborhood:

"...MHS has provided parking for approximately 1,400 cars for large events on campus and off-campus. The school regularly provides additional parking for events at Neil Blaisdell Center. As such, MHS is confident that additional off-street parking can be made available to support periodic large activities on campus."

Inaccurate Maps and Diagrams Minimize Community Impacts of the Athletic Complex Master Plan

During the Master Plan process, the DOE consultant has continued to use maps and diagrams which inaccurately reflect neighboring residents and businesses. For example, the Figure 1.3, Neighborhood Connectivity diagram (page 1-6) for the Pre-Consultation documents does not include the Moana Pacific condominium towers at the corner of Pensacola Street and Kapiolani Boulevard.

During a recent community presentation on the Master Plan, similarly-inaccurate diagrams showing details of the relocated track/football field in relation to the surrounding community indicated a large flat area on the corner that the Moana Pacific towers are located (sample copy attached).

It should be noted that construction of the Moana Pacific towers (whose zoning was approved by HCDA in 2005) was completed in 2007 - the same year that the McKinley High School master planning effort got started.

Thank you for the opportunity to provide these comments. We look forward to working with the Department of Education and McKinley High School to develop an Athletic Complex that supports both school and community needs.

Sincerely,

Senator Brickwood Galuteria
District 12
Iwilei, Chinatown, Kaka'ako

Senator Carol Fukunaga
District 11
Makiki/Tantalus-Ala Moana

Councilmember Ann Kobayashi
District 5
Manoa-McCully/Moiliili, Kaimuki

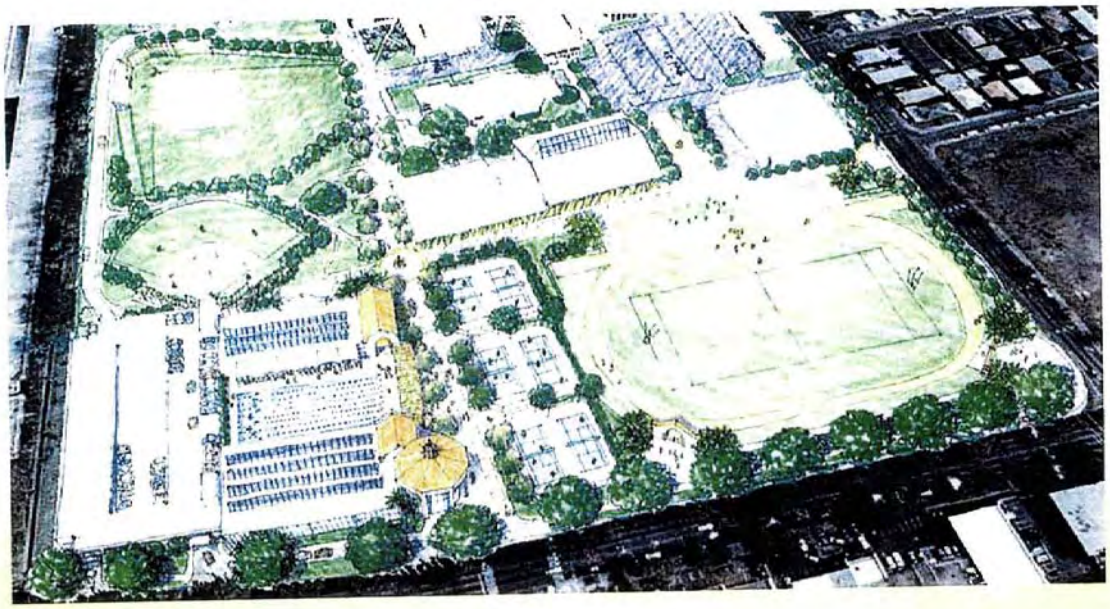
Representative Tom Brower
District 23
Waikiki, Ala Moana

Representative Karl Rhoads
District 28
Kaka'ako, Iwilei

McKinley High School Athletic Complex Master Plan

GROUP 70 INTERNATIONAL

January 2009



Athletic Complex Rendering

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Katherine M. MacNeil
AIA, LEED AP

Tom Young
AIA

January 6, 2011

Senator Brickwood Galuteria, Senator Carol Fukunaga, Representative Tom Brower, and Representative Karl Rhoads
Hawaii State Capitol
415 South Beretania Street
Honolulu, HI 96813

Council Member Ann Kobayashi
Honolulu City Council
530 S. King Street, Room 202
Honolulu, Hawaii 96813

Subject: **Pre-Consultation Comments for Draft Environmental Assessment (Draft EA)**
McKinley High School Athletic Complex Master Plan
Honolulu, O'ahu, Hawai'i
TMK: (1) 2-3-009:001 (por.)

Dear Sir/Madam:

Thank you for your Pre-Consultation comment letter dated October 27, 2010 concerning the Draft EA for the McKinley High School Athletic Complex Master Plan. We appreciate your support of improvements to McKinley High School's athletic facilities.

We offer the following in response to your comments:

1. Traffic and Parking Issues / Public and Private Partnership – On July 14, 2008, DOE representatives met with the City and County of Honolulu Enterprise Services (City) to discuss the possibility of expanding the Neal Blaisdell Center parking structure (meeting minutes attached). At that time, the City said that the existing parking structure is not built to handle the expansion of extra levels of parking. The DOE recognizes the reality of fiscal constraints and will continue to pursue partnerships in the development of new athletic facilities and will pursue revenue generating possibilities (in accordance with DOE policy and State law).

   The possibility of utilizing the City's mass transit system to accommodate sport spectators will be discussed in the EA. The Draft EA will also explore other parking requirement standards for high school in addition to the HCDA's parking requirement.

2. Inaccurate Maps and Diagrams Minimize Community Impacts of the Athletic Complex Master Plan – Maps and diagrams used in the Draft EA will be updated with the most current aerial photograph available to better reflect the surrounding community. Analyses completed for the Draft EA incorporate current conditions in the neighborhood.

We will provide your office with a copy of the Draft EA. We appreciate your input and participation in the pre-consultation process.

Sincerely,

GROUP 70 INTERNATIONAL, INC.

Christine Mendes Ruotola

Christine M. Ruotola, AICP, LEED AP
Principal Planner

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