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July 26, 2004

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State of Hawaii Department of Health  
Hazard Evaluation and Emergency Response (HEER) Office  
919 Ala Moana Blvd., Room 206  
Honolulu, Hawaii 96814

**Subject: Final Phase I Environmental Site Assessment located at Fort Ruger  
Cannon Club, Honolulu, Hawaii**

Dear Mr. Bernstein:

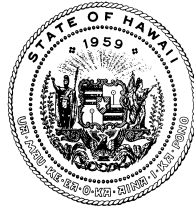
Enclosed are six (6) bounded copies of the Final Phase I Environmental Site Assessment at Fort Ruger Cannon Club, Honolulu, Hawaii. This report has been modified from the draft to include Hawaii Department of Health's comments and requests.

Should you have questions or require additional information, please contact me at (808) 545-2462 x. 110. We appreciate the opportunity to support the Hawaii Department of Health on this project.

Very truly yours,

Russell Okoji  
Program Manager

Enclosure



**Phase I Environmental  
Site Assessment  
Fort Ruger Cannon Club  
Diamond Head Crater  
Honolulu, Hawaii**

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Prepared for:

**State of Hawaii Department of Health  
Hazard Evaluation and Emergency Response (HEER) Office  
919 Ala Moana Boulevard, Room 206  
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Prepared by:

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**Project #: 3-251-90010**

**July 2004**

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<u>LETTER</u>	<u>TITLE</u>
A	February 4, 2004 Site Visit Photos
B	Laboratory Analytical Data Package
C	PCB Status of Transformers
D	EDR Inquiry Report

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## LIST OF ACRONYMS

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ACM	Asbestos-Containing Material
AMEC	AMEC Earth and Environmental, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
CMU	Concrete Masonry Unit
CORRACTS	Corrective Actions
DOH	State of Hawaii Department of Health
EDR	Environmental Data Resources, Inc.
ERNS	Emergency Response Notification System
HEER	Hazard Evaluation and Emergency Response
KIUC	Kauai Island Utility Cooperative
LBP	Lead-based Paint
LUST	Leaking Underground Storage Tank
NPL	National Priorities List
PCB	Polychlorinated Biphenyl
Presidio	Presidio Hotel Group, L.L.C.
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TMK	Tax Map Key
TSD	Treatment Storage and Disposal
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank

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## **SECTION 1 INTRODUCTION**

This report, prepared by AMEC Earth and Environmental, Inc. (AMEC), presents the results of a Phase I Environmental Site Assessment at the former Fort Ruger Cannon Club (herein referred to as the “site”) located at the northern foot of Diamond Head Crater, Honolulu, Hawaii. This work was prepared under a non-emergency response contract (ASO Log No. 02-131), to support the State of Hawaii Department of Health (HDOH) in performing an Environmental Site Assessment at this Site.

### **1.1 PURPOSE**

The purpose of this investigation was to identify and evaluate evidence that may indicate any environmental hazards at the Site due to past or current management of chemicals or other materials that, if released or not properly controlled, could present a risk to human health or the environment.

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

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

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

complies with the current ASTM E1527-00 Standard Practice for Environmental Site Assessments.

## **1.2 SCOPE**

The scope of services for this Phase I Site Assessment consists of the following tasks:

- review of federal, state, and local lists of known hazardous waste sites;
- physical walk-through and visual inspection of the site and its associated structures, and a drive-by survey of the surrounding property;
- collection of a limited number of building material samples that are representative of Site conditions or appear to present a significant potential identified risk to workers or visitors due to their condition or accessibility. These samples will be analyzed for asbestos-containing materials (ACM) and/or lead-based paint (LBP);
- compilation and analysis of the data collected during the assessment; and
- preparation of this report to document the activities conducted during the assessment, and to present the findings and recommendations for investigation or further assessment activities, as deemed appropriate.

## **1.3 SITE LOCATION**

The subject site is a 7-acre site located on the island of Oahu in Kapahulu, Honolulu, Hawaii at Diamond Head Crater (see Figure 1). The site boundaries are defined by the property designated by tax map key (TMK) 3-1-42:11. Records indicate this land has historically been under the jurisdiction of the military and was transferred to the Hawaii Department of Land and Natural Resources (DLNR) in 2000. The property is in the process of transferring to University of Hawaii's Kapi'olani Community College; construction for classrooms and kitchen facilities for culinary studies is planned. The existing buildings are currently abandoned.

#### **1.4 PREVIOUS INVESTIGATIONS**

In August 1998, an Environmental Baseline Survey was performed on the Site by the Directorate of Public Works, Environmental Division of Schofield Barracks, Hawaii. This report stated a site reconnaissance was conducted in September 1997 and asbestos-containing materials (ACM) had been found in the floor tiles of Building 103 (former Officer's Quarters). Building 103 has since been removed and only a bare concrete pad remains.

The Environmental Baseline Survey stated that a survey performed by PRC Environmental Management Inc. in 1991 found one of the three transformers located on the Site to contain PCBs. In 1992, this transformer was removed and disposed and a PCB-free transformer was installed. The three transformers on Site were inspected and declared PCB-free by the US Army Environmental Hygiene Agency during a site assessment survey performed in September 1993.

The Department of Public Works, Environmental Division performed a site reconnaissance in 1997 and confirmed that all three transformers are PCB-free.

This site contains no underground or above-ground storage tanks (USTs). This was indicated by the 1998 *Environmental Baseline Survey* and confirmed by the EDR report (*EDR Radius Map with GeoCheck*, 2004).

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## **SECTION 2**

### **HISTORICAL LAND USE**

Research on historical land use was conducted for the purpose of evaluating whether past or current practices involving the use, storage, treatment, generation, and/or disposal of hazardous substances or petroleum products may have taken place on the site or if contamination on properties in the site vicinity may have impacted the subject site.

#### **2.1 HISTORICAL INFORMATION SOURCES**

Various resources were used to evaluate the historical use of the site and the adjacent land. AMEC reviewed a United States Geological Survey (USGS) 7.5-minute series historic topographic map *Honolulu Quadrangle* dated 1983 and several aerial photographs from 1970 to 2001. (Air Survey Hawaii, 2003). A review of the State of Hawaii Bureau of Conveyance ownership records was also performed for the parcel of land on which the site is located.

##### **2.1.1 Review of Aerial Photographs**

Aerial photographs for the subject property taken from 1970 to 2001 were reviewed at Air Survey Hawaii. These photographs were reviewed to identify any evidence of activities of environmental concern. A summary of relevant observations from the aerial photography is presented below:

November 11, 1970: All buildings that comprise the original Fort Ruger Cannon Club appear to be intact (except the gazebo, which had not yet been constructed): the former guardhouse, the main Cannon Club building, and the six officer's quarters. The buildings are surrounded by palm trees and lush foliage.

January 4, 1971: Site conditions are similar to those observed in the previous photograph.

August 31, 1971: The northeastern most officers' quarters has been torn down and leveled.

January 26, 1972: Site conditions are similar to those observed in the previous photograph.

May 16, 1974: Site conditions are similar to those observed in the previous photograph.

May 24, 1984: The guard shack and the remaining five (5) officers' quarters have been torn down. Only the concrete foundations and stairs remain. The gazebo is now visible.

February 11, 1988: The guard shack appears to have been removed.

January 17, 1992: Site conditions are similar to those observed in the previous photograph. Many cars are parked in the parking lot.

March 5, 1993: Site conditions are similar to those observed in the previous photograph.

January 31, 1995: Site conditions are similar to those observed in the previous photograph.

April 4, 1997: Site conditions are similar to those observed in the previous photograph.

June 13, 1997: Site conditions are similar to those observed in the previous photograph. The parking lot is empty.

June 3, 2000: Site conditions are similar to those observed in the previous photograph.

September 10, 2001: Site conditions are similar to those observed in the previous photograph.

### **2.1.2 Review of Historical Topographic Map**

AMEC reviewed a USGS topographic map of the area dated 1983 (USGS, Honolulu Quadrant, 1983). The Site lies inside the US Military Reservation in Diamond Head State Monument along the northern foot of Diamond Head Crater. The area is generally hilly, sloping down toward westward. Outside the crater, the area is primarily residential with the exception of Leahi Hospital, Kapiolani Community College and Kaimuki Intermediate School to the northwest. Kapiolani Park lies within one mile to the west and the ocean within one mile to the south.

### **2.1.3 Review of Land Ownership from Bureau of Conveyance**

The site occupies approximately 7.8 acres and is defined by the tax map key (TMK) number 3-1-42:11. The earliest record found at the Bureau of Conveyance for the nearby Parcel 6 denotes this parcel belonged to the Fort Ruger Military Installation. The first record of Parcel 11 is in July 17, 1959 that indicates this parcel was under the jurisdiction of the Fort Ruger Military Installation. There is also reference to Presidential Executive Order 6408 that defines the boundaries of this military installation that are comprised by this Parcel 11 and several neighboring parcels.

The 2002 Realty Directory indicates this parcel is currently owned by the State of Hawaii.

## **2.2 HISTORICAL USE OF THE SITE**

This site served as the officer's club for Fort Ruger Army Installation, known as the Cannon Club. The entire installation dates back to 1906. The Cannon Club and grounds consisted of nine (9) buildings, only two (2) of which are still standing. Inside the main officer's club building was a kitchen, dining room and dance floor. Next to this building to the west is a gazebo with an adjacent sun deck to the north. These buildings still remain, though in poor condition. The six (6) officers' quarters were located north of the main building, and the guard shack was situated at the entrance of the road that led to the club.

In late 1970 to early 1971 Building 102 (former officers' quarters) was removed, and the remaining five officers' quarters (Buildings 103, 105, 106, 107 and 108) were removed in 1976. Aerial photographs of the Site indicate the guard shack was removed between 1974 and 1984.

The club was officially closed in 1997. Ownership was transferred from the US Army to the State of Hawaii Department of Land and Natural Resources (DLNR) on March 31, 2001. The University of Hawaii Kapiolani Community College began a 65-year lease on the property from the DLNR in March 2003.

## **SECTION 3 SITE CONDITIONS**

### **3.1 GEOLOGY AND HYDROGEOLOGY**

The US Department of Agriculture (USDA) soil survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii classified the soil of the site as Malakapa Clay and fill material. Malakapa Clay is generally well drained and exists in the upland areas of Salt Lake Crater, Mokapu Peninsula and Diamond Head Crater. The soil is formed from volcanic tuff and sustains a long, dry period in the summer. It typically consists of 6 – 12% slopes. The surface layer is very dark grayish-brown clay to a silty clay loam that is typically 8 inches thick and mildly alkaline. This layer has a sticky plastic nature when wet and cracks widely upon drying. Below this layer lies mildly alkaline to moderately alkaline very dark grayish-brown clay to silty clay loam, approximately 18 – 36 inches thick. Beneath this is weathered volcanic tuff that is light-gray to dark grayish-brown. Runoff is slow to medium. This soil is best used for urban development or pasture.

Fill land consists of various materials and is generally used for industrial zoning and home sites (USDA, 1972).

The Site is situated on the Honolulu Aquifer, which is comprised of upper and lower aquifer types. The upper aquifer is classified as unconfined, basal and sedimentary. There is a moderate to high saline potential groundwater source that is replaceable and has a high vulnerability to contamination. The lower aquifer is confined, basal and flank, and is listed as an irreplaceable, currently used, fresh drinking water source with a low vulnerability to contamination (Mink and Lau, 1990). Groundwater on this site generally flows north-northwest. The Site is makai, or down-gradient, of the Hawaii State Underground Injection Control Line (UIC). The closest drinking water well is located approximately 2900 feet west of the Site.

### **3.2 TOPOGRAPHY**

Because the Cannon Club site is situated on the outer walls of Diamond Head Crater, an inactive volcano, the topography of the site is fairly steep with the elevation increasing

south towards the crater rim. The land has been graded such that the main Cannon Club building, upper parking lot and sun deck rest at the same elevation.

### **3.3 ADJACENT PROPERTIES**

Diamond Head Crater State Monument lies inside the crater. This recreational park is maintained by the State of Hawaii DLNR and includes hiking trails leading to the peak of Diamond Head and an observation area. A portion of the crater interior is under the jurisdiction of the State of Hawaii Department of Defense. This area is segregated by fencing and access is controlled by a 24-hour security guard.

The zoning to the north, east and west of the Site is primarily residential. Leahi Hospital, Kapiolani Community College and Kaimuki Intermediate School lie to the northeast of the Site. To the south lies Diamond Head Crater State Monument. Within one mile to the west is Kapiolani Park.

The nearest residential area lies within a few hundred feet of the Site. Based on visual observations, there is no contamination present that would present a threat to human health.

## **SECTION 4**

### **SITE RECONNAISSANCE**

The purpose of this task was to visually observe evidence of the use, storage, generation, and disposal of potentially hazardous substances and petroleum products, and indicators of possible releases of hazardous substances and/or petroleum products at the site. Evidence of possible releases of hazardous substances or petroleum products may include discolored soil, flooring, or paving; visible leaks; odors; and apparent stressed vegetation. A visual survey of adjacent properties from public thoroughfares was also conducted. AMEC personnel conducted the Site reconnaissance on February 4, 2004 and site photos are included in Appendix A. The following discussion presents the observed conditions of the subject site and adjacent properties.

#### **4.1 GENERAL OBSERVATIONS OF THE SITE**

The Cannon Club is located along the northern foot of Diamond Head crater up a small road off Monsarrat Avenue. The road is fenced off and the remaining two (2) buildings are abandoned. These buildings are in poor condition and have been severely vandalized. The grounds have not been maintained.

The building that served as the main club is now open and exposed to the elements because most of the large glass windows have been destroyed. The damage from a fire that took place in 2003 at the southwest wing destroyed much of the entrance, smaller rooms (which probably served as closets) located near the entrance, a portion of the dance floor area and majority of the stage area. There is a great deal of debris near the exterior of the southwest wing. The debris is categorized as municipal solid waste comprised mostly of miscellaneous paper, food containers, broken small appliances, an old compressor and an empty, rusted propane tank. There is a fountain at the entrance of the club, but this has since been overgrown by weeds.

Inside the building, most of the rooms are empty except for miscellaneous debris such as broken building materials, paper, bedding and food containers (evidence that these rooms appear to have been occupied by transient persons, particularly in the smaller rooms beyond the kitchen and main dining room). All of the appliances have been removed inside the kitchen.

The gazebo is still intact, though all the glass walls have been broken. The wooden beams that comprise the ceiling are in good condition; they appear relatively new and have not been exposed to rain.

There is a small trash site in the lower parking lot adjacent to the former officers' quarters consisting mostly of empty beer bottles and tree debris. There is a single automobile battery discarded at the beginning of the road leading to the lower parking lot. It was intact and did not appear to be leaking. There are approximately 3-5 discarded automobile batteries along the side of the road leading to the upper parking lot. Although batteries were observed on the property, risk from such a small quantity of batteries is considered *de minimis* and does not classify as a recognized environmental concern. All of the batteries observed were intact and in their original state.

Only concrete pads remain of the six (6) officers' quarters and the guard shack. The grounds surrounding these pads are free of debris.

#### **4.2 OBSERVATIONS OF ADJACENT PROPERTY**

To the east of the Site, is an adjacent property, which previously appears to have experienced grading and excavation activities. Stockpiled soil was observed in various locations on the adjacent property. A petroleum-based odor was detected from one of the stockpiles, approximately 20 feet behind the guard shack. Further investigation of the stockpile revealed approximately five (5) 5-gallon unmarked plastic buckets containing what appeared to be a tar-like substance upon the stockpile. This substance appeared to be confined to the plastic buckets, and was observed in a semi-solid state. Due its confined and semi-solid state and observed quantity, it does not appear at this time to be a recognized environmental concern that would affect the Site.

#### **4.3 ASBESTOS-CONTAINING MATERIALS**

The Cannon Club was constructed in 1945. Prior to the 1970s asbestos-containing materials (ACMs) were commonly used in various materials including gypsum wallboard, sink mastic, ceramic tiles, drop ceiling tiles, water heater insulation and

roofing materials. The presence of ACMs would not pose an environmental concern unless building materials were disturbed during renovation and/or demolition, are in deteriorating condition, and/or are friable.

Because of the 2003 fire, many of the building materials are burned, friable and/or deteriorating from subsequent exposure to the elements. AMEC collected seven (7) representative samples from within the Cannon Club building and sent them to Oceanic Analytical Laboratories, Inc. (Oceanic) to confirm the presence of asbestos. These seven samples were selected based upon different substrates of building material commonly known to contain ACM, such as acoustic ceiling and wall tile, acoustic texture spray and floor tile. Oceanic subcontracted Asbestos TEM Laboratories, Inc. to perform the asbestos analyses. Asbestos analytical results are summarized in Table 1. As depicted below, none (0) of the seven (7) samples tested positive for asbestos. The complete laboratory data package is included as Appendix B.

**Table 1**  
**Analytical Results for Suspect ACM Samples**

AMEC Sample ID #	Laboratory Sample ID #	Date/Time Sampled	Sample Description	Asbestos % Concentration
CC 001	0402065-01A	2/4/04 @ 1037	White ceiling tile from manager's office.	< 1%
CC 004	0402065-04A	2/4/04 @ 1106	Textured ceiling material from main dining room. Care was taken to select samples with minimal fire damage.	< 1%
CC 006	0402065-06A	2/4/04 @ 1122	White/gray wall tile from west wall of stage. Material sustained fire damage.	< 1%
CC 007	0402065-07A	2/4/04 @ 1126	White/gray ceiling tile from former ceiling of stage. Material sustained fire damage.	< 1%
CC 009	0402065-09A	2/4/04 @ 1145	Yellow ceramic wall tile in kitchen with grout.	< 1%
CC 012	0402065-12A	2/4/04 @ 1245	Floor tile at bar.	< 1%
CC 014	0402065-14A	2/4/04 @ 1301	Textured white wall material on front of Cannon Club outside.	< 1%

*The reporting limit for asbestos was estimated to be 1% asbestos using a visual area estimation technique.*

An environmental baseline survey conducted in August 1998 indicated that the concrete slab of former Building 103, one of the former officer's quarters, contained Chrysotile asbestos gray and red tile. The document further stated this material was "scheduled to be

removed” before the Cannon Club site was to be turned over as excess property. The tile was not observed during the February 2004 site inspection.

#### 4.4 LEAD BASED PAINT

The use of lead based paint before 1978 was unrestricted. Lead based paint was suspected in the Cannon Club because it was built in 1945, prior to the US EPA mandate. The condition of the paint in the Cannon Club was observed to be badly deteriorated. Representative paint chip samples were collected for each of the different colors or layers of paint observed throughout the site and analyzed for total lead. A total of seven (7) paint chip samples were taken and sent to Oceanic for total lead analysis. Total lead was analyzed to confirm or deny the presence of lead paint at the property. Total lead analytical results are summarized in Table 2. The complete laboratory data package is included as Appendix B.

**Table 2**  
**Analytical Results for Suspect LBP Samples**

AMEC Sample ID #	Laboratory Sample ID #	Date/Time Sampled	Sample Description	Lead % Concentration
CC 002	0402065-02A	2/4/04 @ 1037	White paint from door frame leading into the manager’s office from the dining room.	0.427 %
CC 003	0402065-03A	2/4/04 @ 1054	Green paint from south wall inside main entranceway. Paint sustained significant fire damage.	1.95 %
CC 005	0402065-05A	2/4/04 @ 1114	Pink paint chips from south wall in dance room. Care was taken to select chips that sustained minimal fire damage.	2.77 %
CC 008	0402065-08A	2/4/04 @ 1130	Maroon, green and white paint chips along riser from dance floor to stage (maroon is undermost layer, then green and lastly, white).	1.57 %
CC 010	0402065-10A	2/4/04 @ 1151	White paint from small room east of kitchen.	0.248 %
CC 011	0402065-11A	2/4/04 @ 1235	White paint on door frame leading from bar to sun deck.	7.16 %
CC 013	0402065-13A	2/4/04 @ 1254	White paint from exterior wall along base of building near entrance.	5.36 %

Paint is considered “lead based” if it has a total lead concentration of 0.5% or greater by mass. Five (5) of the seven (7) paint chip samples exceed this criteria. As a result, lead based paint is a recognized environmental concern at the Cannon Club site.

For disposal purposes, paint is considered hazardous waste if TCLP results exceed 5 ppm (0.0005% by mass) (DOH Solid and Hazardous Waste Branch, Office of Solid Waste Management). Exceedances in the 5 ppm criteria require disposal in a RCRA permitted hazardous waste facility. There is currently no RCRA permitted hazardous waste landfill in the State of Hawaii. If the lead based paint debris fails the TCLP analysis for lead, it will be classified as a hazardous waste and must be sent to an approved hazardous waste landfill outside the state. However, if the TCLP results yield lead concentrations of less than 5 ppm, debris waste may be disposed in a construction and demolition landfill on Oahu.

#### **4.5 PCB-CONTAINING EQUIPMENT**

Behind the Cannon Club are three pad-mounted vault transformers. A survey conducted in 1991 by PRC Environmental Management, Inc. found one of these transformers to contain PCBs. This transformer was replaced in 1992. In 1993, the US Army Corps of Engineers Department of Public Works, Environmental Division performed a site assessment survey and confirmed the three existing transformers were all PCB-free.

Hawaiian Electric Company, Inc. has confirmed there are no HECO-owned transformers on site. A copy of this confirmation can be found in Appendix C.

#### **4.6 HAZARDOUS MATERIALS**

There were no hazardous materials observed onsite.

#### **4.7 SOLID WASTE**

No solid waste storage areas were observed during site reconnaissance activities.

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**SECTION 5**  
**REVIEW OF FEDERAL, STATE, AND LOCAL LISTS AND AVAILABLE FILES**  
**OF REPORTED HAZARDOUS SUBSTANCE/PETROLEUM PRODUCT**  
**SOURCES AND RELEASES**

This section includes results of a review of federal, state, and local lists and available files of reported hazardous waste sites and hazardous substance/petroleum product sources and releases. Environmental Data Resources, Inc. (EDR) provided the federal and state environmental release listings. EDR's database is continually updated and is considered one of the most comprehensive in the industry. This information is provided in Appendix D and is summarized below.

**5.1 DATABASES AND REGULATORY FILES REVIEWED**

A list of the Federal Sources and Hawaii State Regional Sources databases reviewed is provided below:

*Federal Databases:*

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

- Hazardous Materials Information Reporting System (HMIRS)
- Material Licensing Tracking System (MLTS)
- Mines Master Index File (MINES)
- NPL Liens
- PCB Activity Database System (PADS)
- Department of Defense Sites (DOD)
- Storm Water General Permits
- Listing of Brownfields Sites
- Risk Management Plans (RMP)
- RCRA Administrative Action Tracking System (RAATS)
- Toxic Chemical Release Inventory System (TRIS)
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act/TSCA (FTTS INSP)
- Section 7 Tracking Systems (SSTS)

*State Databases:*

- State Hazardous Waste Sites List (SHWS)
- Facilities permitted as solid waste landfills, incinerators, or transfer stations (SWF/LF)
- State of Hawaii Department of Health (DOH) Leaking Underground Storage Tank (LUST) Database
- DOH Registered Underground Storage Tanks (UST) Database
- Voluntary Response Program Sites (VCP)
- DOH Hazard Evaluation and Emergency Response (HEER) Office State Spills List (SPILLS)

These databases are reviewed to document the location of known federal and state Superfund sites, or other known hazardous waste sites in proximity to the site following American Society for Testing and Materials (ASTM) search distance guidelines. AMEC uses most current ASTM Standard E1527-00 as the basis for delineating a study area during the database review (ASTM, 2000). Briefly, factors to be considered in determining the minimal search distances include: (1) the density (for example, urban, rural, or suburban) or the setting in which the property is located; (2) the distances that the hazardous substances or petroleum products are likely to migrate based on local geologic or hydrogeologic conditions; and (3) other reasonable factors.

## **5.2 SUMMARY OF DATABASE REVIEW AND REGULATORY AGENCY CONTACTS**

### **5.2.1 Subject Site**

No records of the Site property were found in the state and federal databases during the EDR environmental records search.

### **5.2.2 Properties within the Vicinity of the Subject Site**

The database search provided by EDR found several listings for the vicinity of the subject site. These are listed below:

- A small-quantity power generator (EPA ID# HIR000121012) is located within ¼ and ½ mile WNW from center of target property at Shell Service Station at 3211 Monsarrat Avenue, Honolulu, Hawaii. No violations are listed.
- A LUST (Facility ID# 9-100337, Tank ID# 5) was located within ¼ and ½ mile from center of target property. Documentation indicates cleanup of a petroleum spill from a 550-gallon used oil tank was initiated on May 19, 1993 for Andy's Arco Service at 3211 Monsarrat Avenue, Honolulu, Hawaii. This fuel station is located approximately 1,400 feet WNW and downgradient from center of target property.
- Four additional USTs (all Facility ID# 9-100337, Tank ID# 92, 89, 87a and 87b) at Andy's Arco Service are listed. No violations on these tanks are reported.
- A LUST (Facility ID# 9-101220) was located within ¼ and ½ mile WNW from center of target property (1,450 feet WNW and downgradient) at Dick's Monsarrat Service at 3206 Monsarrat Avenue, Honolulu, Hawaii. Documentation indicates cleanup was completed on May 5, 2003. This service station has a total of four gasoline and used oil USTs, all listed as permanently out of use (Tank ID# R-89, R-87, R-92 and R-4).
- A Category 2 spill was reported at Dick's Monsarrat Service where an automobile hit a hose at the station causing a gasoline release. No further information is available.

- A UST (Facility ID# 9-200198) is located within ¼ and ½ mile ENE from center of target property at the Federal Aviation Association (FAA) Ft. Kaala RCAG at Mt. Kaala (1,890 feet from center of target property) in Honolulu, HI. This UST is listed as being permanently out of use since January 20, 1998.
- A LUST (Facility ID# 9-100048) was located within ¼ and ½ mile west and downgradient from center of target property at Stan's Union Service, 3045 Monsarrat Avenue, Honolulu, Hawaii. Site cleanup was completed on October 9, 2001. This service station has a total of three gasoline and used oil USTs listed as permanently out of use (Tank ID# R-1, R-2 and R-3).
- A LUST (Facility ID# 9-101062) was located with ½ and 1 mile northeast from center of target property at Leahi Hospital at 3675 Kilauea Avenue, Honolulu, Hawaii. Documentation indicates there was a confirmed release reported on December 21, 1998. The Leahi Hospital is at a higher elevation than the Cannon Club site, though a potential release at the hospital would not impact the target property. No further information regarding the release is available.
- A diesel LUST (Facility ID# 9-100207) was located within ½ and 1 mile ESE and downgradient from center of target property at FAA Diamond Head RML, 4204 Diamond Head Road, Honolulu, Hawaii. Confirmed releases were reported on September 8, 2000 and October 22, 2001. Records indicate site cleanup was completed for both releases. This station has a total of three diesel USTs listed as permanently out of use (Tank ID# R-M-1, R-M-2 and R-3).
- A LUST (Facility ID# 101805) was located within ½ and 1 mile ESE of the target property at Civil Defense in Diamond Head Crater, Honolulu, Hawaii. Site cleanup was completed on February 20, 2002. This site has one diesel tank listed as permanently out of use since December 2, 1997.
- 2000-3000 gallons of oil and diesel were released from a tugboat that ran aground on the reef near Diamond Head (Case no. 19910322-1). No date was provided for this incident and no further information is available.
- A LUST (Facility ID# 9-102976) was located within ½ and 1 mile SSE and at a higher elevation of the target property at Diamond Head Monument, Diamond Head Road, Honolulu, Hawaii. Site cleanup was completed on May 10, 1995. This location has a total of two gasoline and diesel USTs (Tank ID# R-1 and R-2) listed as permanently out of use since August 29, 1994.

- A spill was reported on February 26, 1996 at the Diamond Head Monument where several 55-gallon drums stored on the property were badly deteriorated. The majority of the 280 drums were empty. This case is noted as a solid waste problem.
- Diamond Head Crater Tunnel, within ½ to 1 mile ESE from center of target property, is listed as a SHWS because this area once stored pesticides (DDT). The initial site screening team reported date on this record is October 29, 1996. This area is down-gradient of the Cannon Club site. No further information is available.

Additionally, Andrew Keith of the Hawaiian Electric Company (HECO) and Liz Galvez of the HDOH Office of Hazard Evaluation and Emergency Response (HEER) Office indicated there was an incident August 14, 2003 where an automobile struck a telephone pole at 3344 Monsarrat Avenue, Honolulu, Hawaii that held a PCB-containing transformer. The transformer leaked, spilling approximately 25 gallons of oil containing 102 ppm PCBs. HECO provided first response, containing the spill. According to HECO and HEER, because the spill did not reach storm drains, was cleaned up within 48 hours and was below reportable volumes of 30 gallons, it was not necessarily to report the case.

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## **SECTION 6**

### **SUMMARY OF FINDINGS AND RECOMMENDATIONS**

AMEC has performed a Phase I Environmental Site Assessment of the subject site to identify and evaluate evidence that may indicate the presence of environmental hazards due to past or current management of chemicals or other materials that, if released or not properly controlled, could present a risk to human health or the environment.

#### **6.1 FINDINGS**

A summary of AMEC's findings, based on this site investigation, is presented below:

- Based on visual observations, there are no recognized environmental conditions on the Site, or the immediate adjacent properties, that may impact groundwater or surface water.
- The main Cannon Club building was built in 1945 when the use of ACM building materials was not restricted. Asbestos was not detected above the reporting limit of 1% asbestos in any of the seven (7) samples taken in this building.
- There are three transformers on site, all of which are certified to be PCB-free by the US Army Environmental Hygiene Agency in September 1993.
- No reportable releases, or odors from hazardous substances or petroleum hydrocarbon products were observed onsite during the Site reconnaissance. There was no solid or hazardous waste visible on site at the time of inspection.
- The 2003 fire that destroyed the southeast wing of the Cannon Club severely damaged the building as a whole.
- Five (5) of the seven (7) paint chip samples are considered "lead based." The condition of the lead based paint on the property's buildings was observed badly deteriorating.
- Approximately six (6) individual batteries were observed on the property.

## **6.2 RECOMMENDATIONS**

### **6.2.1 Lead Based Paint**

The presence of lead based paint is confirmed on the existing structure. At the time of the Site Reconnaissance, the paint on the structure was observed to be badly deteriorated. In general, according to the US EPA website regarding lead based paint, lead based paint in good condition does not pose a threat to human health. However, lead based paint observed to be peeling, chipping, chalking, or cracking requires attention due to the potential health effects to individuals exposed to lead.

Although general public exposures to lead based paint at the Cannon Club Site is unlikely to be significant, evidence of transient persons has been observed at the Site. As a result, the lead based paint at the site may be a potential threat to human health. Additionally, the nearest resident property is approximately 1/8 of a mile away from the site. Airborne particulates of lead impacted dust, as a result of deteriorating lead based paint, may pose a potential threat to human health. Currently, there is insufficient data on lead impacted dust to assess the potential health threat to human receptors on adjacent properties. The estimated cost to perform an evaluation of health risks from dust that may originate from the site is \$10,000.

AMEC recommends the following alternatives:

1. Secure the property to minimize exposure; and
2. Remove the lead based paint.

#### **6.2.1.1 Securing the Property to Minimize Exposure**

Secure the building with fencing at least 6-feet in height, along the perimeter of the building at least 3-feet beyond the dripline, to minimize transient individuals and children being exposed to the deteriorating paint. It is also recommended that signs be posted along the fencing warning individuals of the potential exposure to the lead paint.

This alternative is an interim solution, and does not remove the potential threat to human health exposure due to lead based paint.

The estimated cost to implement this alternative is approximately \$4,000 based upon \$25/linear foot for chain link fencing at an estimated 160 linear feet around the perimeter of the building.

### **6.2.1.2 Removal of the Lead Based Paint**

Since the site was scoped for redevelopment, the Cannon Club building may have been demolished. Due to the confirmed presence of lead based paint, lead based painted portions of the building may require disposal under RCRA. Estimated costs for RCRA disposal are provided below. Alternatively, removal of the lead based paint prior to demolition (lead based paint abatement) would remove the potential threat to human health by lead based paint debris. This debris could then be disposed in a permitted construction and demolition landfill.

#### **6.2.1.2.1 Waste Stream Evaluation**

Prior to demolition of the building structure or lead based paint abatement, AMEC recommends confirmation sampling of lead based paint and analysis for TCLP to assess an appropriate disposal method of the lead based paint debris. AMEC recommends an additional five samples be collected from previously sampled locations to confirm the presence of lead based paint sent to the laboratory for TCLP analysis. Five (5) samples are recommended because five (5) of the seven (7) samples collected in this Phase I ESA exceeded the regulatory criteria for lead based paint.

The estimated cost to perform the sampling recommended is \$1,340.00. This estimate is based on five (5) lead based paint samples sent to a laboratory for TCLP analysis, and eight (8) man hours for one environmental professional to collect and deliver the samples. The average TCLP sample is approximately \$140/sample, and each average labor hour is approximately \$80.00/hour.

#### **6.2.1.2.2 Lead Based Paint Abatement Followed by Disposal in a Permitted Construction and Demolition Landfill**

If lead based paint fails the TCLP analysis, lead based paint abatement may be required. Lead based paint debris is currently regulated under RCRA. In the event TCLP concentrations exceed 5ppm by weight, the lead based paint debris would be classified as a hazardous waste under RCRA, and would require disposal at a permitted RCRA hazardous waste landfill. There are currently no permitted RCRA hazardous landfills in the State of Hawaii accepting hazardous waste.

Based upon drawings of the building, an estimated 10,400 square feet of wall is impacted with lead based paint. The current average cost of lead based paint abatement is approximately \$13/square foot. It is estimated approximately two (2) 55-gallon drums are required to collect all the lead based paint from abatement activities. It is estimated each drum would cost \$1,200 to dispose. Professional consulting services (planning documents, health and safety clearances for lead based paint abatement and documentation) is typically estimated at 20% of the abatement cost. Therefore, the total cost to abate the lead based paint is approximately \$164,640.

Following the lead based paint abatement; the construction and demolition debris may then be disposed of in a permitted construction and demolition landfill. PVT Landfill on Oahu is a permitted construction and demolition landfill, which accepts non-hazardous lead based paint debris at an approximate cost of \$26/ton. The additional cost of disposal at a construction and demolition landfill may be averted by using select non-hazardous debris for fill onsite during redevelopment activities.

#### **6.2.1.2.3 Demolition and Disposal of Lead Based Paint Debris in a RCRA Permitted Landfill**

If samples fail TCLP analysis, the lead based paint debris may require special disposal consideration upon demolition. An alternative to lead based paint abatement may be the demolition of the building, segregation of waste streams and disposal of lead based paint debris to a RCRA permitted landfill. Upon demolition of the building, material not impacted with lead based paint such as unpainted structural steel, roof sheathing and shingles and flooring material may be disposed on-island in a permitted construction and

demolition landfill. Demolished lead based paint debris may be segregated from other demolition debris and disposed in a RCRA permitted landfill.

Lead based paint debris will most likely be required to be containerized in special 1 cubic yard cardboard boxes for transportation and disposal. The amount of debris containerized per box is based upon the physical size of the debris as well as the weight of the debris per box. Typically, it is not suggested a container box exceed 1.5 tons. Transportation and disposal cost per box is estimated at \$550/box. Based upon visual observation of the quantity of lead based paint debris, and the type of debris (e.g., demolished concrete masonry units, lumber) it is estimated approximately 400 boxes may be required for transportation and disposal of lead based paint debris only. Total transportation and disposal costs may be near \$220,000. Demolition of the building material not impacted with lead based paint may be performed by a contractor without lead based paint certification. Demolition of lead based paint debris will require a contractor certified to demolish lead based paint debris.

Demolition costs to demolish lead based paint debris is not generally documented in environmental estimating references, and therefore an estimate for lead based paint demolition costs are unknown. It is recommended these costs be obtained from a certified lead based paint contractor.

#### **6.2.1.2.4 Demolition and Disposal of Lead Based Paint Debris in a Permitted Construction and Demolition Landfill**

In the event the lead based paint debris does not exceed 5 ppm by weight for TCLP analysis, the lead based paint debris may be disposed of in a permitted construction and demolition landfill. PVT Landfill located on the Island of Oahu is a permitted construction and demolition landfill. This landfill is a permitted construction and demolition landfill, which accepts non-hazardous lead based paint debris at an approximate cost of \$26/ton. The cost of disposal at a construction and demolition landfill may be avoided by using select non-hazardous debris for fill onsite during redevelopment activities.

### **6.2.2 Disposal of Batteries**

Although batteries observed at the site are not a recognized environmental concern, it is recommended they be removed and properly disposed. The batteries found on the Site appeared to be intact in their original casing, therefore, no additional sampling around the batteries is recommended. The estimated cost to dispose of the batteries by a subcontractor are approximately \$300, which includes four hours of labor for an environmental technician at approximately \$65/hour, and battery disposal fees of \$5 per battery.

Pending proper care and removal of lead based paint debris and batteries, the Cannon Club Site is suitable for residential or commercial redevelopment. With the exception of the recommendation for lead based paint and the batteries, and based upon the findings of this Phase I environmental assessment, no further environmental investigation is required for the Site.

## **SECTION 7 LIMITATIONS**

The findings, observations, conclusions, and recommendations of this report are limited by the technical requirements specified in the non-emergency response contract (ASO Log No. 02-131) between HDOH and AMEC effective December 4, 2001. The findings, observations, conclusions, and recommendations presented herein solely identify and evaluate evidence that may indicate that environmental hazards exist at the Site due to past or current management of chemicals or other materials that, if released or not properly controlled, could present a risk to human health or the environment.

In preparing this report, AMEC relied on information derived from visual reconnaissance, governmental agencies, computer databases, and personal interviews. Except as set forth in this report, AMEC made no independent investigations as to the accuracy and completeness of the information derived from the listed sources. AMEC assumed that all information obtained during the course of the investigation is accurate and complete.

All findings, observations, conclusions, and recommendations stated in this report are based on facts; circumstances; applicable federal, state and local laws, rules, and regulations; and generally accepted national standards for such services in existence at the time that the report was prepared. AMEC does not assume liability for investigation of occurrences and environmental conditions following the production of this report. Topics not explicitly discussed within the report should not be assumed to have been investigated or tested.

AMEC Earth and Environment has prepared this document solely for the use and benefit of the HDOH and DLNR. Any use of this document or information herein by persons or entities other than the HDOH or DLNR without the express written consent of AMEC will be at the sole risk and liability of said person or entity, and AMEC will not be liable to such persons or entities for any damages resulting therefrom. It is understood that this document may not include all information pertaining to the described site.

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## SECTION 8 REFERENCES

- Air Survey Hawaii, 2003. Historical Aerial Photos dated from 1970 to 2001.
- American Society for Testing and Materials (ASTM), 2000. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*.
- EDR Radius Map with GeoCheck, 2004. *Ft. Ruger Cannon Club, Inquiry Number 01124533.1r*. February 5, 2004.
- Mink, J. F. and S. L. Lau, 1990. *Aquifer Identification and Classification for the Island of Oahu: Groundwater Protection Strategy for Hawaii*. Water Resources Research Center, University of Hawaii at Manoa, Technical Report No. 179. February.
- State of Hawaii, Department of Health Solid and Hazardous Waste Branch, Office of Solid Waste Management. *Disposal of Lead-Based Paint Waste*. Effective January 1, 2003.
- United States Department of Agriculture (USDA) Soil Conservation Service, in cooperation with The University of Hawaii Agricultural Experiment Station, 1972. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Washington D.C., U.S. Government Printing Office.
- United States Environmental Protection Agency (USEPA), 1998. *Management and Disposal of Lead Based Paint Debris; Proposed Rule*.
- United States Geological Survey (USGS), 7.5 Minute Series, 1983. *Honolulu, Hawaii Quadrangle*.
- United States Army Garrison, Hawaii, Directorate of Public Works, Environmental Division, 1998. *Environmental Baseline Survey: Excess of Ceded Lands at Fort Ruger, Oahu, Hawaii*. Schofield Barracks, Hawaii. August 1998.

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**APPENDIX A**

**February 4, 2004  
Site Visit Photos**

## **APPENDIX B**

### **Laboratory Analytical Data Package**

## **APPENDIX C**

### **PCB Status of Transformers**

**APPENDIX D**

**EDR Inquiry Report:  
Fort Ruger Cannon Club**



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July 26, 2004

Mr. Davis Bernstein  
State of Hawaii Department of Health  
Hazard Evaluation and Emergency Response (HEER) Office  
919 Ala Moana Blvd., Room 206  
Honolulu, Hawaii 96814

**Subject: Response to Comments on Draft Phase I Environmental Site  
Assessment located at Fort Ruger Cannon Club, Honolulu, Hawaii**

Dear Mr. Bernstein:

Below are responses to comments submitted to AMEC on May 21, 2004.

**General Comments**

*A general comment and concern I have has to do with my need for clear recommendations and guidance. I sense a reluctance on AMEC's part to offer expert interpretations of the findings, to draw conclusions as to the environmental condition, and to provide clear advice as to what, if any, further environmental work is required prior to developing the property. For me, it is not enough to present findings. I need to rely on AMEC as experts in the environmental field to provide me with clear recommendations and guidance.*

Commend noted. AMEC has made changes to the report to reflect these wishes for more clear and specific recommendations and guidance based on findings.

*For example, the Work Order for this project calls for the "formulation of detailed recommendations regarding the sampling and analysis needed to prepare a thorough site characterization, and a detailed estimate of the cost to conduct the work needed. Since the report does not contain recommendations for sampling and analysis, can I assume*



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*that no further characterization is needed? If not, it would help me a great deal if this were stated as a clear conclusion of the site assessment.*

Further analysis has been recommended and approximate cost estimates for further study have been included. Additionally, alternate recommendations that consider future land use (i.e., redevelopment and demolition of the building) are now provided.

*Also, on page 6-2, there are two recommendations regarding lead based paint and auto batteries. From the absence of any other recommendations, can I assume that there are no other potential environmental issues about which DOH should be concerned with regard to the planned development of the property? If not, it would be very helpful if AMEC could interpret its findings by drawing a conclusion such as, "Except for the lead based paint and the auto batteries, AMEC believes that, from an environmental perspective, this property could be developed for residential or commercial uses."*

The *Findings and Recommendations* have been enhanced and more specific recommendations have been included. In summary, AMEC does believe that, from an environmental perspective, this property could be developed for residential and/or commercial uses pending proper care and removal of the lead paint and disposal of the few automobile batteries.

*I sense from other conversations that AMEC is concerned with the potential liability related to recommendations made in Phase I assessments. Please let me know if this is the case so we can come to terms with my need for clear conclusions and recommendations. I feel that the disclaimers/limitations on p. 1-1, 6-1, and 7-1 are clearer and more forceful than the conclusions regarding the environmental condition and readiness for development of the property.*

As previously stated, the *Findings and Recommendations* have been enhanced with more specifics about the effort that would be involved with developing the Site property. Regarding liability, AMEC has modified the limitations to read, "AMEC Earth and Environmental has prepared this document solely for the use and benefit of the State of Hawaii Department of Health and Department of Land and Natural Resources."

### **Specific Comments**

**1. p. 1-1 and p. 6-1.** *I would like to delete the last sentence of p.1-1, paragraph 1, "This report is prepared for the sole use and benefit of HDOH ." To my mind, this is not accurate. I would also like to delete paragraph 2 entirely since it is repeated on p. 7-1 where it better belongs.*



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*What concerns me is that this document was prepared expressly for the use of DOH and others besides DOH. If this is a change from my earlier concerns with this disclaimer, I apologize. But I don't want to give this report to those whom we are trying to assist and tell them the report is not for them to use as they see fit....albeit at their own risk.*

The sentence "This report is prepared for the sole use and benefit of HDOH" has been deleted from Section 1. Paragraph 2 of Section 6 has also been deleted, though a similar version of this language remains in Section 7. Again, AMEC has modified the limitations to read, "AMEC Earth and Environmental has prepared this document solely for the use and benefit of the HDOH and DLNR."

**2. p. 4-2 par. 4 typo in last line.** *The word "has" can be deleted.*

Comment noted. This has been corrected.

**3. p.6-1, bullet two.** *The statement about the lead paint is appropriate but begs a number of other questions. In our Work Order for this project we asked for "a detailed estimate of the cost to conduct the work needed." While it was focused on the need for additional sampling, I think you can extrapolate to the need for some discussion of the quantity of lead paint and the ballpark cost for disposing of the paint as a hazardous waste on the mainland.*

*I realize that this additional information may not be part of a "standard" Phase I assessment. We have talked about the fact that the term "Phase I" does not capture exactly the information we need from an initial assessment. This is why we added the additional language to the project description in the Work Order.*

*Now, having said all this, I believe that the point may be moot in this case because the building has been demolished. However, if it were still standing, I would be requesting this information. Also, I think it is an important point for other projects.*

Further comments have been added to the *Findings and Recommendations* about lead paint. For disposal of lead based paint in a construction and demolition facility, TCLP results must yield lead concentrations of 5 ppm or less. Further TCLP sampling is needed to determine if the paint from the Cannon Club is hazardous for disposal. Estimated costs for TCLP sampling have been provided. Costs have also been provided for several alternate remedial options. They include lead based paint abatement followed by disposal of construction and demolition (C&D) debris at a permitted C&D landfill, disposal of lead based paint debris at a permitted hazardous waste facility, and disposal of non-RCRA hazardous waste C&D debris at a permitted C&D landfill.



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**4. Section 3.1 and 3.2 Site conditions.** *Based on the geology, hydrogeology and topography of the site, please discuss if there is a threat to groundwater and surface water.*

Comment noted and discussed in Section 6: Summary of *Findings and Recommendations*. As Section 3 indicates, the Site is *makai*, or downgradient, from the Hawaii State Underground Injection Control line (UIC), so the Site would not be a threat to groundwater were there a point source of contamination present (such as a leaking underground storage tank (LUST)). However, nothing was observed at the Site that would cause a threat to groundwater or surface water were the Site *mauka* (upgradient) from the UIC. There were no records of USTs at the site and nothing was observed during the Site visit to indicate such.

**5. Section 3.3. Adjacent Properties.** *How far is the site from the residential area? Based on the distance and the nature of the contamination, is the site posing a threat to human health?*

The nearest residential area lies within a few hundred feet of the Site. Based on visual observations, there is no contamination present that would present a threat to human health.

**6. Section 4.2 Asbestos-Containing Materials and Lead-Based Paint.** *Please provide more information on the sampling that was conducted for lead and asbestos analyses, who conducted the sampling and the purpose. Also, based on the result of the sampling is the site posing a threat to kids that might be playing or passing by the site? Do we need to place signs around the building, etc.*

Because the Cannon Club was constructed during a period where the use of lead paint was prevalent, paint chips were collected upon Site visit and sent to Oceanic Analytical Laboratories, Inc. (Oceanic) for total lead concentrations.

Lead paint is potentially hazardous to human health through inhalation if the paint is deteriorating and flaking, or if swallowed. Signs should be posted throughout indicating the paint is known to contain lead that could cause deleterious health effects if inhaled or ingested.



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**7. Recommendations section.** *The recommendations should answer at least the following key questions: 1) Is the site posing a threat to human health or the environment? 2) Is there a need for further site investigation? 3) Are there environmental issues that should be considered in light of the future plans to develop the site?*

The *Findings and Recommendations* section has been modified to reflect HDOH's need for clearer recommendations. Further analysis is necessary to determine if the paint throughout the site is indeed "hazardous" to determine to which landfill the paint should be sent for disposal. Disposal of hazardous lead paint is costly, and there are no landfills accepting hazardous waste in Hawaii. The environmental issues associated with the Site are lead paint disposal (if the TCLP results indicate the paint is hazardous) and discarded automobile battery removal.

Very truly yours,

Russell Okoji  
Program Manager

Enclosure