

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

Sanita
FEB 14 2007

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMDSHWB

February 12, 2007

U0225DP

Mr. Richard K. Mirikitani
Vice President & Corporate Counsel
Castle & Cooke Resorts, LLC
100 Kahalu Avenue
Mililani, Hawaii 96879

Dear Mr. Mirikitani:

SUBJECT: Lanai City Power Plant
Facility ID No. 9-400773 / Release ID No. 030016

The Department of Health (DOH) has reviewed the report, *Former Lanai Power Plant – Additional Release Response Report*, dated September 2006, and prepared by EnviroServices & Training Center, LLC. Please note the report has been placed with the public record.

Based on the information submitted, we conclude that *no further action* is necessary for this release.

However, please note that state law requires any detectable level of petroleum contamination discovered in the sub-surface of current or former UST facilities to be reported to this office within 24 hours, including *de minimis* contamination, contamination found at concentrations lower than DOH Tier 1 action levels, and contamination found after receiving a status of No Further Action from DOH. Generally, further work will not be required if contaminant concentrations are lower than DOH action levels, but notification of DOH is required within 24 hours.

As noted in the report, a small volume of petroleum contaminated soil remains in the sub-surface at the site. If this soil is excavated or disturbed precautions should be taken for worker safety. Excavated soil may be reused on-site provided that any nuisance concerns are addressed and the soil is not moved to an ecologically sensitive area of the property such as wetlands, marshes, surface water bodies, etc. Please note that if the soil is excavated and transported off-site, you are required to contact our Office of Solid Waste Management to discuss proper management of the soil.

Mr. Richard K. Mirikitani
February 12, 2007
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If you have any questions regarding this letter, please contact Dr. Darren Park of our Underground Storage Tank Section at (808) 586-4226 or e-mail at darren.park@doh.hawaii.gov.

Sincerely,


STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

September 5, 2006

U09004DP

Mr. Richard K. Mirikitani
Vice President & Corporate Counsel
Castle & Cooke Resorts, LLC
100 Kahelu Avenue
Mililani, Hawaii 96879

Dear Mr. Mirikitani:

SUBJECT: Lanai City Power Plant
Facility ID 9-400773 / Release IDs 900013 / 030016

The Department of Health (DOH) has reviewed the following reports:

1. *Work Plan - Additional Subsurface Investigation* (Release ID 030016), dated July 20, 2006, and prepared by Brewer Environmental Services (BES).
2. *UST Checklist For Final Release Response Reports* (Release ID 900013), dated July 26, 2005, and prepared by BES.

Please note these reports have been placed with the public record.

The DOH has the following concern regarding the work plan for release ID 030016: Figure 2 does not show approximate locations of the proposed sites for the three soil borings adjacent to the Power Plant structure. Please submit a revised map that includes locations for the three proposed soil borings. DOH appreciates your prompt action and attention to this detail.

The June 28, 1993 and January 18, 1994 laboratory analyses of soil samples obtained from the underground storage tank excavation following removal were non-detectable for petroleum contaminants. Based on the information submitted, we conclude that *no further action* is necessary for the confirmed underground storage tank release ID 900013.

Facility
SEP 06 2006
CRYSTINE L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
ENDSHWB

Mr. Richard K. Mirikitani
September 5, 2006
Page 2

However, please note that state law requires any detectable level of petroleum contamination discovered in the sub-surface of current or former UST facilities to be reported to this office within 24 hours, including *de minimis* contamination, contamination found at concentrations lower than DOH Tier 1 action levels, and contamination found after receiving a status of No Further Action from DOH. If concentrations are lower than DOH action levels, then further work may not be required.

If you have any questions regarding this letter, please contact Dr. Darren Park of our Underground Storage Tank Section at (808) 586-4226 or e-mail at: darren.park@doh.hawaii.gov.

Sincerely,

STEVEN Y.K. CHANG, R.E., CHIEF
Solid and Hazardous Waste Branch

DEC 26 2006 E

ADDITIONAL RELEASE RESPONSE REPORT

Lanai Power Plant
750 Fraser Avenue
Lanai City, Lanai, Hawaii
Facility ID No. 9-400773
Release ID No. 030016

Prepared For:
CASTLE & COOKE RESORTS, LLC
P.O. Box 898900
Mililani, Hawaii 96789-8900

Prepared By:
ENVIROSERVICES & TRAINING CENTER, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819
tel: (808) 839-7222

ETC Project No. 02-6011

September 2006



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1.0 CERTIFICATIONS AND LIMITATIONS

EnviroServices & Training Center (ETC), LLC has completed this Additional Release Response (ARR) Report for the project site. ETC's findings and conclusions presented in this report are professional opinions based solely upon visual observations of the project site, government regulations, and upon interpretation of the laboratory data and field measurements gathered at the time and location of the study.


This report is intended for the sole use of ETC's Client, Castle & Cooke Resorts, LLC (C&C), exclusively for the project site indicated. The scope of services performed in execution of this project may not be appropriate for satisfying the needs of other users, and any use or reuse of this report or the findings and conclusions presented herein is unauthorized and at the sole risk of said user.

ETC makes no guarantee or warranty; either expressed or implied, except that our services are consistent with good commercial or customary practices designed to conform to acceptable industry standards and governmental regulations. No warranty or representation, expressed or implied, is included or intended in its proposal, contracts, or reports. Opinions stated in this report apply only to the site as outlined and apply to the conditions present at the time of project activities. Moreover, these opinions do not apply to site changes that occur after the project activities.

Prepared By:


Tim Tybuszewski
Environmental Scientist
EnviroServices & Training Center, LLC

Reviewed By:


Damon Hamura
Environmental Engineer
EnviroServices & Training Center, LLC

Date:

9/27/06

2.0 EXECUTIVE SUMMARY

EnviroServices & Training Center (ETC), LLC was contracted by Castle & Cooke Resorts, LLC (C&C) to perform additional release response activities at 750 Fraser Avenue, Lanai City, Lanai, Hawaii hereinafter referred to as the Property.

ETC's investigation included the identification of potential areas of contamination based on a previous Underground Storage Tank Closure and Release Response Report performed for the Property. A work plan was then prepared by ETC describing additional delineation and sampling activities. Based on the information obtained for the work plan, boring locations were selected. Field screening of subsurface soils and laboratory analysis of soil samples for the presence of petroleum hydrocarbons was also included in the investigation.

ETC utilized the Hawaii One Call service to identify potential underground utilities in the vicinity of the proposed boring location. ETC contracted Environmental Services Network – Pacific (ESN) to utilize a direct push method to advance three soil borings. Boring B-1 was located along the northern portion of the Power Plant structure approximately 9.5 feet from the northwest corner of the structure. Boring B-2 was located adjacent to the east of the Power Plant structure approximately fifteen (15) feet south of the limit of the previous excavation. Boring B-3 was located adjacent to the west of the Power Plant structure directly across from the previous excavation (Appendix I, Figure II). ESN collected continuous soil cores with 4-foot long core samplers with acetate sleeve from ground surface to twenty (20) feet below ground surface (bgs). ETC personnel screened the soil for visual and olfactory indications of hydrocarbon contamination. Soil headspace readings were collected with the PID at various depths, typically every 2-feet. Following screening of the soil, a soil sample was collected from ten and twenty feet bgs.

Five (5) discrete samples were collected from the soil stockpile generated during initial release response activities to quantify residual petroleum concentrations. A total of eleven (11) soil samples were collected from the Property.

Analytical data from the subsurface soil samples indicated that petroleum hydrocarbons and related constituents were not detected above method detection limits. Therefore, ETC believes that the contamination observed during UST closure has been fully delineated to an area directly beneath the Power Plant structure. Furthermore, analytical data for soil samples collected from the petroleum contaminated soil stockpile generated during initial release response activities indicated that residual constituent concentrations were well below DOH Tier 1 Action Levels.

Based on the analytical data, ETC recommends that no further action be required to address the release since 1) petroleum-impacted soil has been completely delineated, 2) petroleum-impacted soil is located beneath a structure that is currently used for storage only, and 3) TPH-D was the only constituent detected during initial release response activities at a concentration exceeding its DOH Tier 1 Action Level.

ETC also recommends that the soil stockpile can be used for backfill material at the facility or other locations.

3.0 INTRODUCTION/PURPOSE

This report presents the results of ETC's findings during additional release response activities for the former Lanai Power Plant (hereinafter referred to as the Property) located at 750 Fraser Avenue, Lanai City, Lanai, Hawaii.

The purpose of this investigation was to delineate subsurface diesel contamination identified during closure of the 5,500-gallon UST and determine diesel and related constituent concentrations existing in the contaminated soil stockpile. The activities were performed in general accordance with the Technical Guidance Manual for UST Closure and Release Response, 2nd Edition, DOH, March 2000.

Specifically, ETC completed the following tasks:

- Contacted the Hawaii One Call Center to identify potential underground utilities.
- Obtained the services of a subcontractor to utilize a direct-push technology rig to collect subsurface soil samples.
- Advanced three soil borings (approximate locations shown in Figure 2) adjacent to the Power Plant structure to determine the extent of diesel fuel contamination in subsurface soil.
- Field screened subsurface soil, using visual/olfactory observations and by analyzing volatile organic compound concentrations in soil headspace using a photoionization detector (PID).
- Collected two soil samples from each boring at approximate depths of 10 feet bgs and 20 feet bgs, since there were no indications of petroleum-impacted soil observed.
- Manually probed the contaminated soil stockpile and collected five discrete soil samples from areas where PID readings were the highest and/or soil appeared stained. Samples were collected at depths of at least 18 inches below the stockpile surface.
- Submitted the soil samples to a local laboratory for analysis of TPH-D via EPA Method 8015 Modified, benzene/toluene/ethylbenzene/xylenes (BTEX) via EPA Method 8021b, and polynuclear aromatic hydrocarbons (PAHs) via EPA Method 8100.
- Prepared this report documenting field activities, sampling procedures, analytical results, and associated figures and photographs.

4.0 SITE BACKGROUND

4.1 Site Description and Land Area

The project site is the Lanai Power Plant, located at 750 Fraser Avenue, Lanai City, Hawaii (Figure 1). The site is located inland of the underground injection control line and is situated at an elevation of approximately 1,550 feet above mean sea level (msl). In the past, the facility and adjacent areas were used for industrial purposes. Currently, however, the Power Plant facility and adjacent areas appear unused and generally overgrown with vegetation. The Power Plant structure is used for storage of equipment and supplies. The Property appeared relatively flat. The Site Location Map is included in Appendix I, Figure 1.

4.2 Geology and Hydrogeology

4.2.1 Regional Geology

The island of Lanai is a shield volcano formed by eruptions at the summit and along three rift zones. The primary rift zone is a broad ridge that trends in the northwest direction and the two minor rift zones trend in the southwest and south-southeast directions. The Palawai Basin, located in the southern portion of Lanai, is the remnant of the caldera formed by the collapse of the shield summit. All lavas of Lanai are tholeiitic basalts, ranging from olivine-free tholeiites through olivine tholeiites to very olivine-rich oceanites. Lava flows range from 0.3 to 30 meters thick, averaging 6 meters, with very little evidence of erosion or weathering between successive flows. In general, pahoehoe flows predominate near vents and a'a flows are abundant on the lower slopes (MacDonald, et al., 1983).

Since Lanai lies in the rain shadow of West Maui and East Molokai, the island is very dry, with an average annual rainfall at the summit of approximately 100 centimeters per year. For this same reason, the northeast portion of the island is sheltered from wave erosion, with broad expanses of alluvium and beaches. Conversely, the southwest portion of the island is fully exposed to waves generated by southwestern storms, creating the phenomenon of high sea cliffs along the leeward portion of the island (Macdonald, et al., 1983).

Wind erosion on Lanai is significant, exhibited by slightly consolidated to completely unconsolidated dune ridges formed by wind blown sand along the southeast portion of the island and deposition of soil from weathered basaltic rocks that form yellowish to reddish brown unconsolidated dunes on the north and northeast portion of the island (Macdonald, et al., 1983).

4.2.2 Site Geology

The site is situated at an elevation of approximately 1,550 feet above mean sea level (msl). The soil at the site is classified as Lahaina silty clay, 3 to 7 percent slopes (LaB). The Lahaina series consists of well-drained soils developed in material weathered from basic igneous rock. In a representative profile, the surface layer consists of reddish brown silty clay; the subsoil consists of a dusky red and dark reddish brown subangular blocky silty clay and silty clay loam. The substratum is soft, weathered basic igneous rock. Permeability is moderate, runoff is slow, and the erosion hazard is slight (USDA, 1972). The soil in the excavation consisted of a reddish brown silty clay and light brown weathered basalt.

4.2.3 Regional Hydrogeology

Basal groundwater is formed by rainwater percolating down through the residual soils and permeable volcanic rock. All of the island situated below sea level, except within rift zones of the volcanoes, is saturated with ocean salt water and thus forms a basal lens called the "Ghyben-Herzberg" lens. A zone of transition between the fresh groundwater and the ocean salt water occurs due to the constant movement of the interface as a result of tidal fluctuations, seasonal fluctuations in recharge and discharge and aquifer development (Macdonald, et al., 1983).

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

4.2.4 Site Hydrogeology

The site is underlain by the Leeward Aquifer System, which is part of the Central Aquifer Sector on the island of Lanai. The aquifer is classified by Mink and Lau, 1993, with the system identification number 50102212 (11111). This system includes an unconfined high level aquifer in dike compartments. The groundwater in this aquifer is described as being currently in use and containing groundwater with a fresh salinity (<250 mg/l Cl⁻). The groundwater is an irreplaceable drinking water source with a high level of vulnerability to contamination (Mink and Lau, 1993).