Kailua-Kona Landfill

Supplemental Environmental Project Workplan

March 14, 2008

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Prepared for:
County of Hawaii
Dept. of Environmental Management
Solid Waste Division

ERM

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County of Hawaii
Dept. of Environmental Management
Solid Waste Division

Kailua-Kona Landfill

Supplemental Environmental Project
Workplan

March 14, 2008

Project # 0061204

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1.0 INTRODUCTION

A scope of work with associated cost estimate is herein provided for further investigation and a subsurface fire suppression demonstration at the Kailua-Kona Landfill. This work may be incorporated into a Supplemental Environmental Project (SEP) as determined by the United States Environmental Protection Agency (USEPA) and the County of Hawaii.

1.1 SITE DESCRIPTION AND HISTORY

The Kailua-Kona Landfill is a closed municipal waste landfill in the North Kona District, about 3 miles north of Kailua-Kona on the west coast of the Island of Hawaii (Figure 1). The landfill operated from about 1975 until 1993. The landfill is approximately 20 acres in size, located east of the Queen Kaahumanu Highway (Tax Map Key 7-4-08:16, Figure 2). Neighbors include the Kailua Police Station and Kealakehe Elementary School (Figures 3 and 4). The closest residence is nearly 1 mile east of the landfill. During operation, several landfill fires were known to exist, and waste combustion is believed to have continued after landfill closure to the present time. Based on discussions with the County of Hawaii and USEPA and review of available historical documents, ERM has developed project objectives and a scope of work to achieve stated objectives.

The USEPA and the County of Hawaii provided ERM with historical documents regarding the landfill. A list of documents received and reviewed is provided in the References section of this report.

Municipal solid waste was disposed of at the facility from the late 1970s until 1993. Waste was placed directly on basalt bedrock without an underliner system; high permeability lava tubes are thought to be present beneath placed wastes. Subsurface fires within the waste material and odor complaints from neighbors are documented as early as 1991.

Also in the early 1990s, before final landfill closure, studies were performed to evaluate landfill gas and ambient air at the landfill and the adjacent Police Station. Air samples were analyzed for volatile organic compounds (VOCs), but none were detected above blank control concentrations. At the time, landfill fires ("hotspots") were known to landfill employees; the hotspots would result in visible flames when exposed. Parametrix (1992a) interpreted temperature probe measurements to indicate that perimeter landfill areas with greater

subsurface air supply were combusting (most or all of these temperature probes are believed to have been destroyed during landfill closure). They recommended engineering considerations for landfill closure to control landfill fires, including a cover system with an impermeable geomembrane and a gas collection system. Parametrix (1992a) recognized that permeable lava tubes could supply air for subsurface combustion even after closure with the recommended engineering controls, and recommended that geophysical surveys be performed to identify lava tubes and such tubes be grout-sealed to prevent air flow.

A Landfill Closure/Post Closure Plan was approved in 1993. ERM has not yet obtained a copy of this plan; however, we did review the response to comments on the plan by Parametrix (1993a). The Hawaii Department of Health (HDOH) expressed concerns on the heat resistance of the geomembrane liner system. ERM understands based on discussions with the County of Hawaii that this liner has in fact failed in certain locations due to excessive heat. Parametrix (1993b) stated that during closure, "sealing these [landfill] side slopes off, air will be eliminated from the refuse, thereby shutting off the oxygen supply, and 'smothering' the subsurface fires...If temperature monitoring indicates that there are areas which are not cooling off as rapidly as others, a barrier trench, filled with low-permeability grout will be installed in native soil adjacent to the elevated temperatures, to effectively block lava tubes in the area."

During closure of the landfill in 1992 and 1993, a gas-collection system consisting of perforated HDPE piping within 3-foot-square, gravel-filled trenches at 150-foot centers was installed and operated. Due to low methane concentrations in the collected gas stream that were not suitable for combustion treatment, the system ceased operations in February 1993 (Parametrix 1993b). A final cover system with 30-mil PVC geomembrane liner and 2 feet of cover soil was installed in late 1993. Temperature and gas monitoring probes were installed during Phase II cover installation, and routinely monitored after closure (Parametrix, 1995a). Temperatures above 120°F were observed in several temperature probes; however, landfill gases were not identified at perimeter gas monitoring locations.

By September 1995, during Phase 3 Closure Work, temperatures in vertical gas extraction wells reached 182 °F, exceeding material design capabilities (Parametrix, 1995a). Several depressions or sinkholes were identified, with several feet of subsidence and smoke odors. Parametrix (1997a) summarized six quarterly monitoring events from 1995 through February 1997. Although they concluded that the landfill was fairly stable, they indicated that "Although temperatures are fairly stable and not alarmingly high, they do not reflect what may be happening deep in the landfill. With the collection wells and trenches closed, there is no flow

past the monitoring ports." Parametrix (1998c) provides a status of sinkhole monitoring (including thermocouple temperature probes) and a map showing seven sinkhole locations where water injection probes were installed to help extinguish subsurface fires associated with sinkhole subsidence. Thermocouple temperatures over 1,000 °F were observed, indicating active combustion. Liner repairs at sinkhole locations were also proposed.

Due to failure of water injection at sinkholes to prevent continued subsurface fires, the County of Hawaii contracted Walker Consultants, Inc., to attempt alternative mitigation techniques. Walker recommended injection of water and liquid carbon dioxide to quench fires, and sealing of liner leaks with wetted soil. In December 2001, 24 carbon dioxide (CO_2) injection probes and 58 water injection probes were installed. In June 2003, 18 addition CO_2 probes were installed. Water and CO_2 were injected episodically from January 2002 through at least January 2004 (Walker 2004). Walker describes "areas of concern" as having methane (CH_4) levels greater than 5 percent and oxygen (O_2) levels greater than 4 percent, and therefore prone to combustion. Walker (2004) describes a general decrease in the extent of "areas of concern" following water/CO_2 injection. The geographic areas of highest concern were the east-center, north-center and northwest portion of the landfill (Walker, 2004).

1.2 *PROBLEM DEFINITION*

ERM understands that the Kailua-Kona Landfill continues to support subsurface waste combustion, with potential associated air emissions of combustion gases (along with decomposition by-products). A Supplemental Environmental Project (SEP) is proposed to achieve the following principal objectives:

1) Better understand the nature and extent of subsurface fires and associated gas by-products to facilitate development of effective mitigation strategies;

2) Conduct a demonstration of subsurface landfill fire suppression using a fire-retardant foam;

3) Extinguish a known area of burning waste material and improve subsurface conditions at the landfill; and

4) Develop a plan and cost estimate for extinguishing all existing landfill fires.

1.3 *PROPOSED SCOPES OF WORK AND COST ESTIMATE*

To fulfill the principal project objectives, a scope of work and associated costs has been developed for consideration. The work falls into two categories: (1) landfill physical/chemical investigation to address Objective 1; and (2) a demonstration subsurface fire suppression project to extinguish an existing fire and determine the efficacy of the fire retardant foam suppression technique, as per Objective 2.

ERM has developed cost estimate for the various scope elements based on technical experience and price quotations from analytical laboratories and for subcontracted services.

2.0 EVALUATION OF LANDFILL SUBSURFACE CONDITIONS

2.1 BACKGROUND

Post-operations air emissions from the Kailua Kona Landfill have reportedly included low levels of VOCs, including benzene, toluene, ethylbenzene, carbon monoxide (CO), and hydrogen sulfide (H_2S) (ATSDR, 1994). Other constituents monitored in the emissions from the site include O_2, CO_2, and CH_4, basic atmospheric gases that are tracked to determine possible subsurface fires. However, an active landfill gas management system is not currently operational at the site. Therefore, an analysis of the current condition of the landfill from a physical and chemical perspective is required to assess the nature and extent of landfill emissions, and the potential for subsurface fires within the waste mound. The investigation and monitoring activities should include both existing gas monitoring probes and extraction wells, as well as supplemental, focused subsurface explorations. Critical to this assessment is knowledge of the east-center, north-center and northwest portions of the landfill, which have been identified most recently as areas of concern.

Several techniques for subsurface fire suppression have been attempted at the landfill. Smothering the fires, involving eliminating the supply of O_2 to the fire source either via soil cover and compaction, cover and leakage repair, and/or the injection of a suppressing gas, such as CO_2, has been attempted. None of these previous efforts were performed to an extent or duration necessary to substantially suppress subsurface fires. Excavating the cover material within the landfill waste and flooding burning material with water and/or suppressants such as a fire-retardant foam is a method that has been attempted at other landfill sites with mixed results (TriData, 2002). A version of removing the cover material and burning waste material from a known hot zone, and extinguishing by way of foam flooding is proposed for the Kailua-Kona Landfill to suppress ongoing subsurface fires.

If the fire is extensive and temperatures are high, applied water may convert to steam upon contact with the burning waste material, and may limit fire-suppression effectiveness. Large volumes of suppression water could potentially infiltrate to the underlying groundwater aquifer, potentially impacting groundwater quality by leaching contaminants from waste materials. Use of a foam suppression material is less likely to result in contaminant leaching and is believed to be a more environmentally-safe suppression technique.

It should be noted that the use of cells in the construction of any landfill, and the application of a soil daily cover, was conceived initially, and is intended primarily as a firebreak feature. The goal was to isolate any fire in a single cell. Often, this requires bulk excavation of the landfill waste material to physically separate the "hot" waste from the remaining "fuel"; this ex-situ separation and extinguishment can be costly with associated air emissions difficult to control. Incomplete removal of all burning waste can permit the fire to re-kindle and eventually migrate from one cell to another as long as there is O_2 available. Another limitation of bulk waste excavation is that it makes O_2 available and can exacerbate the fire. Alternatively, the burning waste may be surgically removed to prevent it from igniting other combustible waste, however this requires knowledge on the precise location of the subsurface fire, which can be difficult to obtain.

The incorporation of cells during landfill construction also introduces a limitation on extinguishing fires through in-situ inundation. The cellular structure; i.e., entombment of waste in soil cells, creates discontinuities in the vertical flow regime for water, foam, or any other delivered fire-suppression fluid through the waste mound. Infiltrating fluids are redirected by the soil layers and may circumvent certain cells. Therefore, inundation from the landfill surface is difficult to assure due to the difficulty of delivering fluid to the precise location of the fire.

Further, the application of water creates potentially-contaminated leachate. This may not be a significant environmental issue if the resulting fluids are collected, extracted, and properly disposed, but at a site such as the Kailua-Kona Landfill, that does not have an underlying liner and leachate collection system, leachate may discharge directly to the underlying groundwater. In this instance, leachate discharges to groundwater which could itself discharge to the Pacific Ocean would be counter to the state and federal policies on leachate management.

The basaltic rock that forms the basement floor and portions of the sidewalls of the landfill exhibits a fractured structure and, further, the intact rock is itself relatively porous. This porosity is supplemented by "lava tubes" formed during deposition that provide open conduits for the exchange of air with the waste in the landfill, as well as the discharge of leachate and groundwater downgradient toward receptors. Injected materials or vertical containment barriers in the vicinity of the lava tubes have been considered to intercept these pathways, but it is expected that these approaches will not significantly reduce the air exchange or water transmission, given the mass porosity of the surrounding rock through both fractures and porous structure.

2.2 *REMEDIAL STRATEGIES*

Subsurface landfill fires are difficult to extinguish, potentially requiring an extended period of time and significant labor and financial resources. Historically, fire suppression methods consisted of inundation or suffocation, where one of the three requirements for combustion (fuel, O_2, and ignition) was eliminated.

Given that the landfill is composed of a high percentage of combustible waste products, the fuel supply cannot be readily eliminated except through separation or completion of the combustion cycle. Such an approach may include the continued, although controlled combustion of the waste in the landfill with the implementation of external emissions capture systems to prevent downstream impacts.

Suffocation eliminates the O_2 supply by interrupting the source or by the introduction of agents that replace the O_2 in the surrounding environment, thereby starving the O_2 pathway. Suffocation may alternatively involve excavation, segregation, and smothering the smoldering waste with soil or fire-retardant materials.

Inundation extinguishes fire by eliminating the ignition source (the ongoing fire), may be accomplished by applying fire suppressants such as water, foams (such as Class A foam [CIWMB, 2007]) and other chemicals. The success of the inundation technique was proven during a subsurface fire suppression demonstration at an undeveloped landfill area within the Candlestick Point State Recreation Area in San Francisco, California. The suppression technique involved trenching to expose the on-going fire and spraying it with a fire retardant foam to extinguish the fire. A similar technique is proposed for demonstration at the Kailua-Kona Landfill.

2.3 *SITE INVESTIGATION APPROACHES*

2.3.1 *General Approaches*

To gain a better understanding of the nature and extent of the subsurface fires that currently exist at the landfill, and to predict the future potential of subsurface fires, a physical and chemical investigation will be conducted. According to the California Integrated Waste Management Board (CIWMB) (2007) and the Federal Emergency Management Agency (FEMA) (TriData, 2002), a subsurface fire can be confirmed by:

- Substantial settlement over a short period of time;

- Smoke or smoldering odor emanating from the gas extraction system or landfill;
- Elevated levels of CO in excess of 1,000 parts per million;
- Combustion residue in extraction wells or headers;
- Increase in gas temperature in the extraction system (above 140°F); and
- Temperatures in excess of 170°F.

These and other indicators will be considered at the Kailua-Kona Landfill.

2.3.2 *Landfill-Specific Approaches*

The three broad approaches available for fire management at the Kailua-Kona Landfill therefore include:

- Inundation;
- Suffocation; and
- Controlled Combustion.
- To assess the potential for success of each approach, and provide information for design and implementation, certain field investigations are appropriate.

In general, the investigations would consist of surficial investigations using remote sensing techniques and monitoring of subsurface well points. Investigations would consist of non-intrusive evaluations, i.e., non-destructive to the current cover system, and in particular the geomembrane.

2.3.3 *Proposed Investigation Scope*

Locating the "hotspots" that may be representative of subsurface fires with a reasonable degree of accuracy will permit developing subsequent investigations and response action strategies that are focused rather than broad. However, the difficulty of identifying localized areas has been demonstrated on this and other landfills (Walker, 2004). Nevertheless, remote sensing techniques should be evaluated as one mechanism for identifying hotspots. This would consist of infrared imagery utilized to identify higher temperature differential zones across the landfill surface. This technique will be limited by the presence of hotspots near the surface. In support of the thermal imagery, topographic mapping of the surface and comparison with prior surveys may be utilized to identify locations where subsurface collapse as a result of waste combustion may have occurred. Thermal and topographic changes can be confirmed in the field

through sensory identification by field staff conducting a reconnaissance survey across the landfill surface, coupled with interviews and historical information available from the operating period of the landfill.

In addition, the remote sensing would be ground-truthed through a field reconnaissance of landfill temperature using shallow temperature probes on a grid pattern. At the grid nodes, field screening with a photoionization detector and methane meter would be utilized to aid in detecting potential emissions through breaches in the geomembrane and the cover system. During the investigation, vertical profiling for temperature, and screening for emissions would be conducted in currently-existing wells at the site. While the screening evaluations will not detect hotspots at depth in the waste or low temperature differentials, this approach will assist in locating a probable subsurface fire for the fire-suppression demonstration project. The result of this investigation will be the consolidated thermal mapping of the landfill surface.

2.4 *FIRE SUPPRESSION DEMONSTRATION PROJECT*

To fulfill the principal project objectives with the ultimate goal of complete fire suppression at the Kailua-Kona Landfill, ERM will conduct a demonstration project to suppress an existing subsurface fire at the landfill using fire retardant Class-A fire suppression foam. Site selection for the demonstration project will be determined based on the findings of the supplemental investigation (Section 2.3.3). In addition to developing optimal procedures for extinguishing "hot spots", this demonstration will actually attempt to extinguish a known problem area of active burning waste, thus improving conditions at the landfill.

A detailed fire suppression work plan will be prepared upon completion of the site investigation to optimize the location of the demonstration area. The fire suppression demonstration project will be conducted in collaboration with the County of Hawaii Fire Department. [ERM has received verbal confirmation from Fire Chief Darryl Oliveira that the Fire Department will participate].

2.4.1 *Conceptual Design*

A conceptual design for the fire suppression demonstration project is provided, however the final design will be determined after the investigation work has been completed. Once a suitable site has been selected, an approximate 75 foot by 75 foot demonstration area will be surveyed and cordoned off. The fire suppression technique will consist of 1) implementation of a proven fire suppression technology consisting of

excavation of burning waste material and suppression on an adjacent suppression deck using a fire-retardant foam product; and 2) trials of an innovative in-situ suppression approach using foam infiltration and waste blending (to the extent necessary to improve foam/waste contact) in an attempt to extinguish burning waste without removal of waste material.

The demonstration area will be selected based on evidence of active shallow waste combustion activity. A suppression deck will be created using crushed stone materials adjacent to the area to be excavated. A dozer or excavator will be employed to remove the two (2) feet of cover materials overlying the existing polyvinyl chloride (PVC) geomembrane, exposing the underlying waste material. Waste material, anticipated to be in part burning, will be excavated in approximate 1-foot lifts and transferred to the adjacent suppression deck for Class A foam suppression. The material on the suppression deck will be worked with a dozer or excavator and foam added to complete the extinguishment. Extinguished waste material will then re-positioned for staging and eventual re-deposition. Excavation and ex-situ waste suppression will occur to approximately 10 feet deep into the waste pile within the footprint of the demonstration area (approximately 65 feet by 65 feet in dimension).

Once ex-situ excavation and above-ground foam fire-suppression has been completed, a trial of in-situ foam fire extinguishment will be performed. Infiltration trenches will be excavated an additional 10-20 feet below the bottom of the existing excavation to facilitate downward penetration of the fire retardant foam into the underlying burning subsurface waste. Trenches will be developed with proper safety precautions and then filled with fire-retardant foam which is intended to penetrate into the underlying burning waste to extinguish combustion. Based on observations of foam infiltration effectiveness, the excavator will be utilized to the degree necessary to loosen waste material facilitating foam penetration.

Once the in-situ foam suppression testing has been completed, the prior removed and foamed waste material will be re-deposited and compacted in the excavation. A 4-foot thick cover of crushed stone material will be placed above the re-buried waste as final cover.

To assess the longer-term effectiveness of the fire-suppression demonstration project, underground temperatures will be monitored over time. Well points containing thermocouples will be placed within the demonstration site near the base of excavated material (and/or near the base of the constructed trenches and in-situ treated materials). Temperatures will be monitored periodically over several months to

determine whether the fire-suppression techniques were temporary or more permanent.

Existing monitoring probes adjacent to the demonstration area will be measured for subsurface temperature and carbon monoxide content prior and subsequent to the fire suppression demonstration.

2.4.2 *Perimeter Air Monitoring*

Prior to and during intrusive waste trenching and foam application, ERM will perform air monitoring to assess both worker health risk and appropriate levels of personal protective equipment and potential downwind air impacts resulting from exposure and disruption of the burning waste mass. Conventional landfill gases including hydrogen sulfide and methane will be monitored within the active work zone and at "exclusion zone" perimeter locations to ensure worker safety. In addition, toxic air emissions will be quantified as described below.

The target air toxic compounds to be measured will include VOCs, PAHs, and the dioxin/furan congeners. The VOCs will be measured using USEPA Method TO-15 with collection in a 6-liter, evacuated SUMMA canister. The canister will be equipped with a pre-set flow controller to maintain a constant sampling rate over the sampling period. Analysis will be performed by Columbia Analytical Services in Simi Valley, California, by gas chromatography/mass spectrometry (GC/MS).

The PAHs and dioxins/furans will be measured using a high-volume sampler equipped with a quartz filter, followed by Tenax or XAD-2 resin sandwiched between two plugs of polyurethane foam (PUF) in accordance with USEPA Methods TO-13A and TO-9A, respectively. The downwind sampling station will consist of one SUMMA canister and one PUF sampler. If power is not available to run the high-volume samplers, portable generators will be deployed, placed downwind of the sampling stations and as far away as possible to avoid biasing the samples.

The PAH and dioxin/furan samples will be shipped overnight at 4°C under chain-of-custody to Vista Analytical Laboratory in Sacramento, California, for analysis. These compounds are analyzed using high resolution GC/MS after solvent extraction of the sampling media.

3.0 *SUMMARY AND RECOMMENDATIONS*

ERM has developed a scope of work and associated costs for a supplemental investigation of subsurface conditions at the Kailua-Kona Landfill and a demonstration of subsurface fire suppression using fire-retardant foam. The developed work scope is designed to evaluate landfill subsurface conditions to aid in remedial solutions for extinguishing subsurface fires. This project is intended to extinguish an existing subsurface fire and provide valuable information for developing a comprehensive landfill-wide fire suppression program.

An opinion of probable cost for implementing a supplemental investigation and demonstration fire suppression project at the Kailua-Kona Landfill is $202,840 as detailed in the attached Table 1.

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Figures

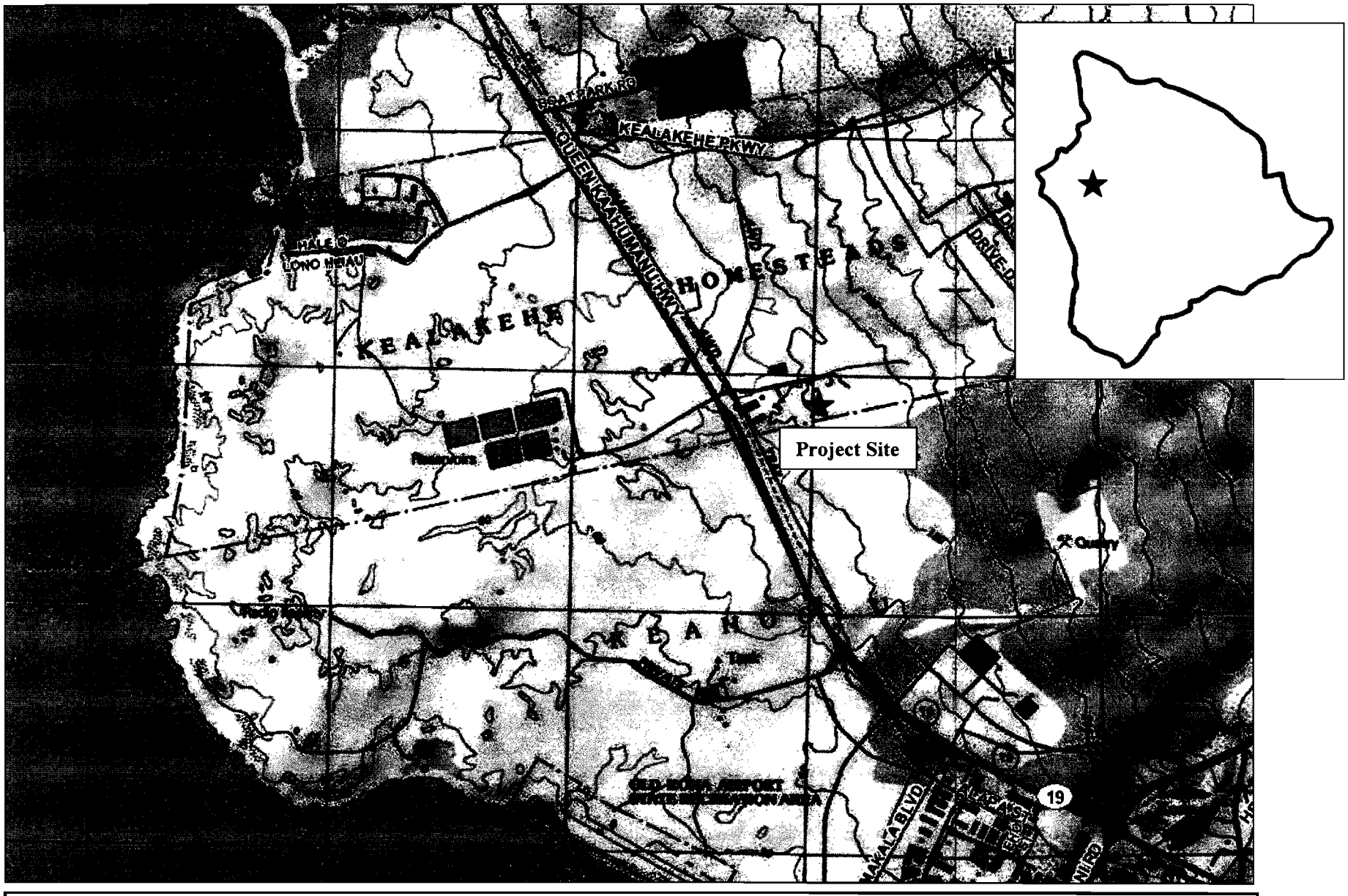

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Figure 1. Project Location Map
Kailua-Kona Landfill

TMK: 7-4-020:016

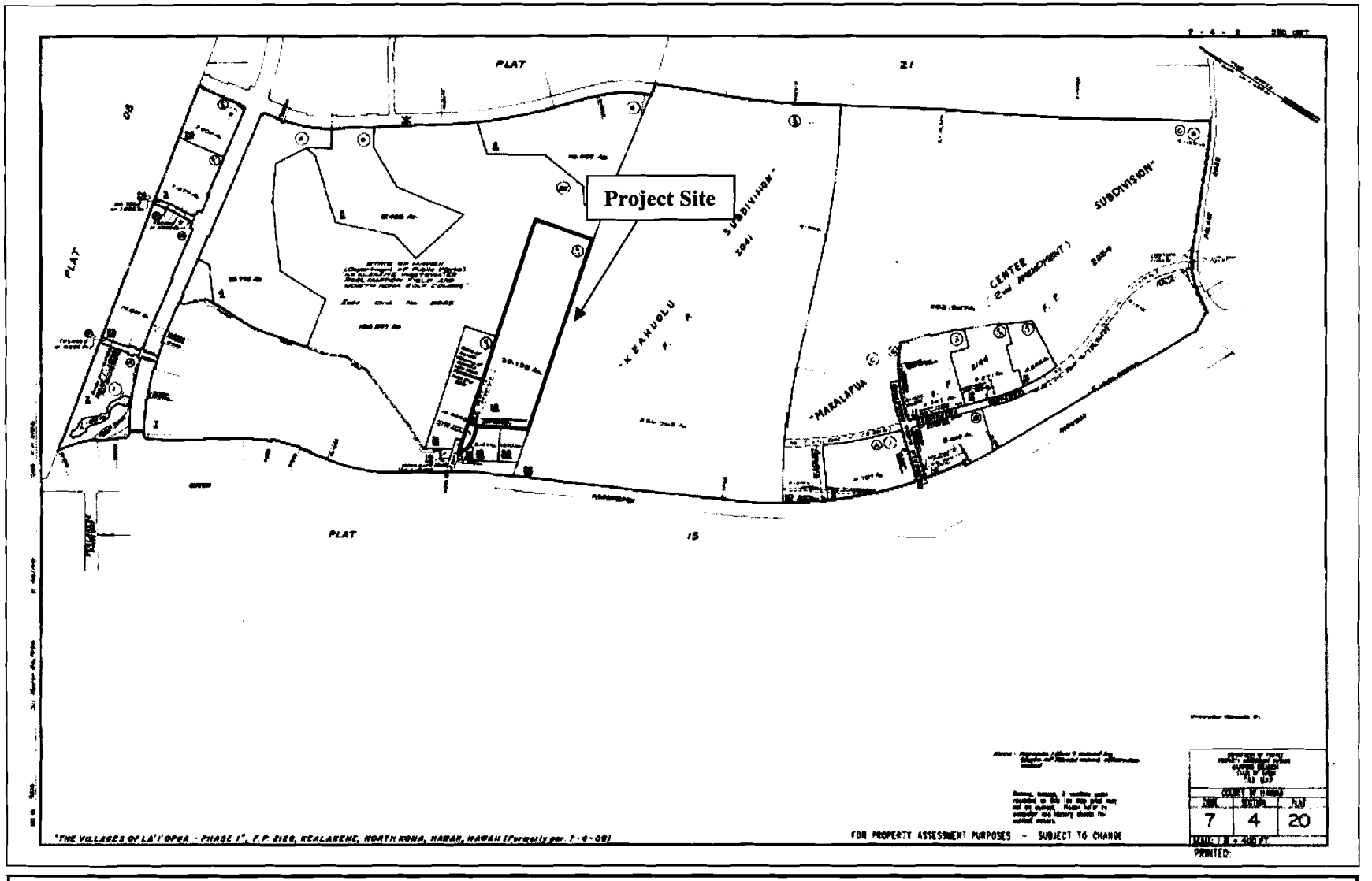

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Figure 2. TMK Site Map
Kailua-Kona Landfill

TMK: 7-4-020:016

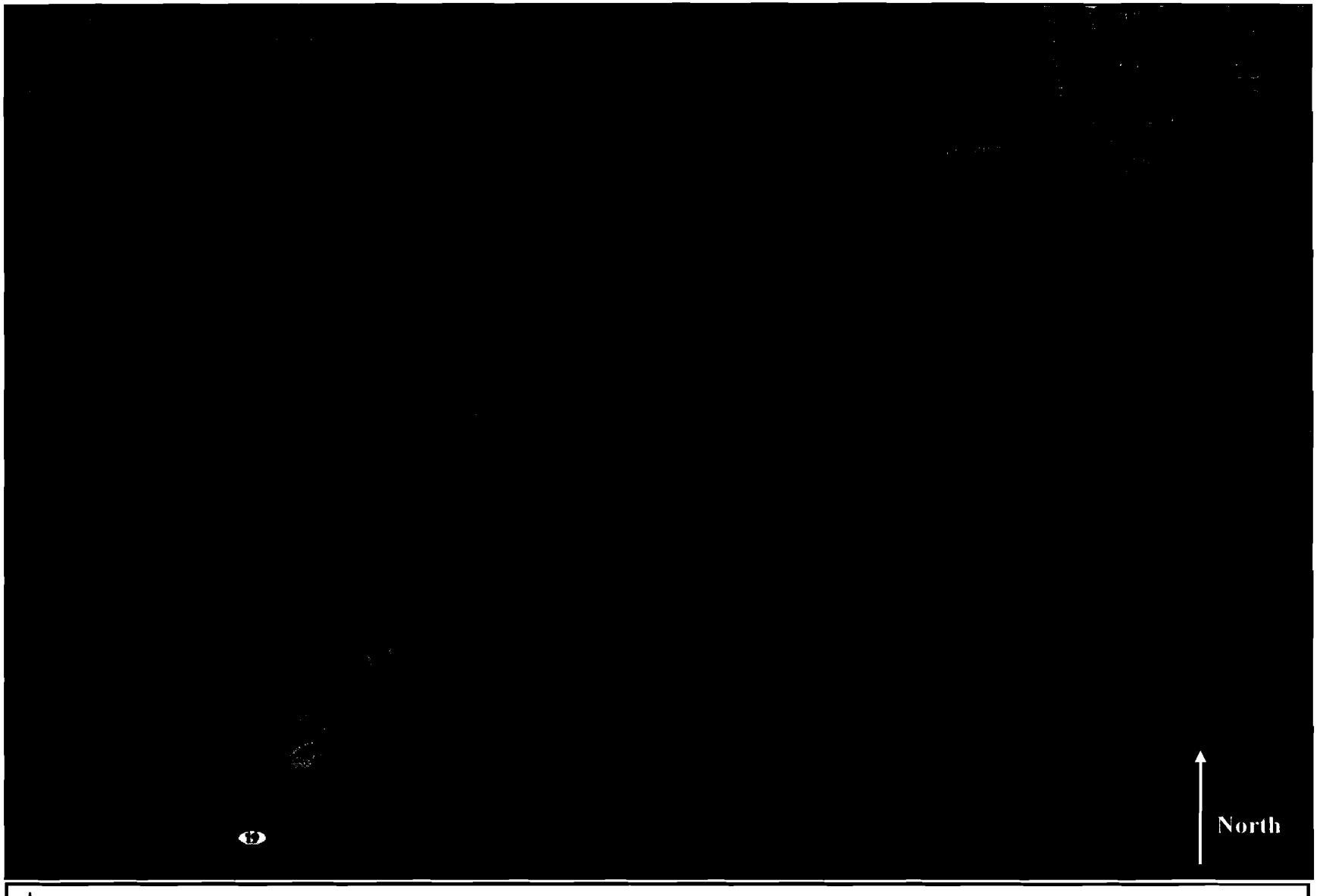

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Figure 3. 2006 Aerial Photograph
Kailua-Kona Landfill and Surrounding Area

TMK: 7-4-020:016

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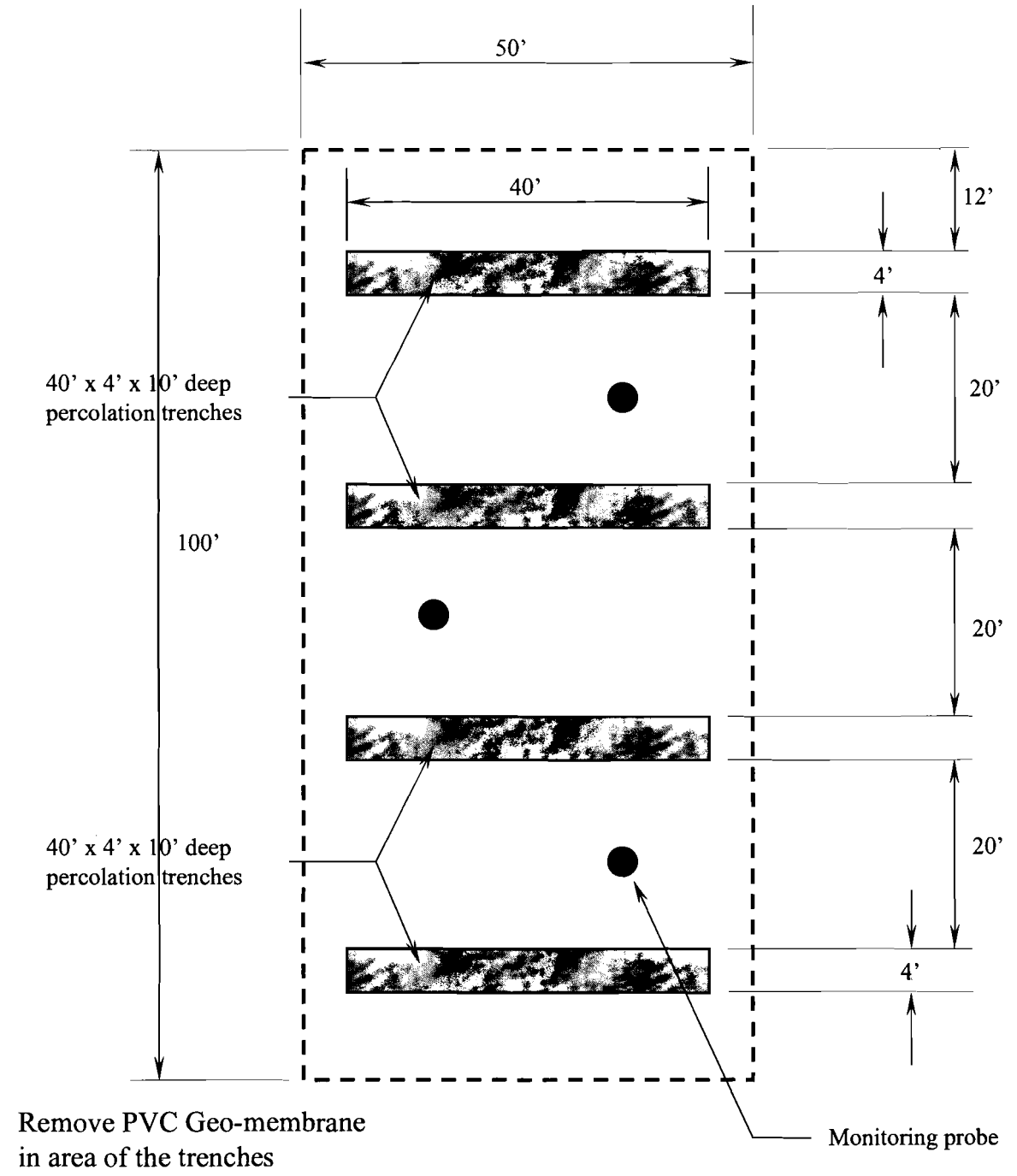
Figure 4. 2006 Aerial Photograph
Kailua-Kona Landfill

TMK: 7-4-020:016

Kailua-Kona Landfill



Not to scale

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Figure 5. Fire Suppression Demonstration Layout (Conceptual)

Tables

Table 1
Opinion of Probable Cost
SEP Workplan Implementation, Kailua-Kona Landfill

Item	
A. Workplan Development	$7,500
Workplan incl. SAP/QAPP	
B. Screening Level	$35,900
Aerial Photogrammetry (Infrared and B&W imagery, 2 events)	
Land Surveying (topographic tie-in, 2 events)	
Topographic & Thermal Mapping (2 events)	
Interviews/Historic Data Accumulation	
Site Reconnaissance/Surface Screening	
Surface Temperature Probes (22 probes)	
Existing Well Screening (assume 4 wells, PID and methane)	
Data Interpretation, Mapping, Report Preparation	
C. Fire Suppression Pilot Demonstration	$141,000
Suppression Work Plan Preparation	
Construct Suppression Deck	
Class A Fire Retardant Foam	
Excavation/Ex-Situ Foam Suppression	
Trenching/ In-Situ Foam Suppression	
Fire Suppression Demonstration	
Backfill Treated Waste/Place Cover Materials	
Install Thermocouples	
Post-Suppression Monitoring	
Report Preparation	
SUBTOTAL:	***$184,400***
Contingency @ 10 Percent	***$18,440***
TOTAL ESTIMATED COSTS:	***$202,840***

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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April 15, 2008

Brian P. Riedel
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RE: Supplemental Environmental Project Workplan – Kailua-Kona Landfill

Dear Mr. Riedel,

The most recent Supplemental Environmental Project (SEP) workplan, dated March 14, 2008 has been prepared to lay out the general scope of work. This SEP included a proposed cost breakdown in Table 1 which is associated with the work to be undertaken.

We are most appreciative of the comments received by Todd Thalhamer of the CIWMB. All of the most recent comments received by e-mail on March 17th will be addressed when the Suppression Work Plan is prepared. This is located under Table 1, Item C. Fire Suppression Pilot Demonstration. The Suppression Work Plan will address the type of Foam, cover material, and the site specific health and safety plan.

To avoid confusion or duplication, the March 14, 2008 Workplan is a general description of the work to be undertaken under this SEP. However, the Suppression Work Plan will be prepared after the Screening Level items under Item B., in Table 1 have been completed and sufficient information is available to prepare the actual Suppression Work Plan.

By way of this letter, we are acknowledging that the recommendation and comments received on March 17th and in previous e-mails by Todd Thalhamer will be reviewed and incorporated appropriately into the Suppression Work Plan.

We look forward to moving ahead with this SEP.

Regards,

Michael Dworsky
Michael Dworsky, P.E.
Solid Waste Division Chief

Cc-email: Bill Cutler, ERM
Todd Thalhamer, CIWMB

"Thalhamer, Todd"
<tthalhamer@CIWMB.ca.gov
>

03/17/2008 10:37 AM

To "'mdworsky@co.hawaii.hi.us'" <mdworsky@co.hawaii.hi.us>, Brian Riedel/R9/USEPA/US@EPA
cc
bcc
Subject RE: SEP Workplan & Cost Table

Michael,

Small world in deed. I asked Lono last week about this site, he is off to New Zealand now. Good to see MAC is busy in Hawaii. Overall I think this work plan is a go with some minor comments.

1. While I believe the plan to address the hot zone has respectable level of success, you need to have contingency plan to excavate material that ignites along the trench walls. You many excavate right on top of the combustion, if this is the case go ahead and remove the burning material even if the material is 8 feet down and your trench now becomes a "T "or and "L".
2. Section 2.1 3rd Paragraph – You may want to add how a Class A foam works to this section. A Class A foam works on organic material by lowering the surface tension of the water on the organic materia . This lower surface tension allows higher penetration rate of water. Also, by decreasing the surface tension, the water foam mixture will aid in fire suppression and decreasing the reignition potential. The foam will also slow the decompositions cycle of the waste.
3. You need to have a discussion on the type of Class A Foam you will be using with the Fire Department, US EPA, and local health department. Some Class A foams are more "environmental sensitive" then others. At a minimum you need to use foam approved by the US Forest Service. I can send this link if you like. The local fire service may state they will only use what they carry. Depending on the foam this may be ok, but I have work arounds for this as well. Also I will suggest using the highest foam setting (3 to 5% in the beginning and backing down as the project continues.
4. Section 2.4.1, Page 10. Your cover material should not be crushed stone. The air infiltrations rate is too high for crushed stone. You should use a low perm soil at a min for long term success.
5. Section 2.4.2 I concur with all the air monitoring approaches; however, you need to actively monitor for CO. CO is the key for health and safety. If you detect CO you know you have other constituents in the air as well. All personnel in the hot/exclusion zone should have a real time CO monitor. They cost about $150 to 300 each and are disposable after two years.
6. Lastly the cost estimate omitted the cost of a site specific health and safety plan. You will need an H&S plan to properly integrate the local contractor with the fire service. You may use the Candlestick H&S with modification as a start.

Just let me know if you nee anything else.

Todd

From: Michael Dworsky [mailto:mdworsky@co.hawaii.hi.us]

Supplement to the Old Kailua-Kona Landfill Workplan
"Communication, Security, and Public Interaction Plan"

This exhibit may be attached to the CAFO

The components of the Communications, Security, and Public Interaction Plan consists of:

- Contact Information
- On-site communications System
- Radio Distribution List
- Off-Site Communication
- Site Security
- Public and Media Liaison

The following outline entails components of the Communications, Security, and Public Interaction Plan which will include the Right-to-Know Public Relations portion.

- Contact Information List
  - Comprehensive list will be prepared as part of the Pre-Plan
    - Contact Position or role in Command Structure
    - Contact Name
    - Emergency Number (911 or 24 hour contact number)
    - Office Number
    - Cell-phone Number
    - Home Number
    - Pager Number (if carried)
    - Fax Number
    - E-mail Address (if available)
  - In Emergency situation, list can be built quickly by copying business cards of participants.
- On-site Communications
  - Effective communications are vital:
  - Instructions should flow through Incident Command structure hierarchy.
  - On major fires, meetings should be organized twice a day. Safety meetings in morning, and debriefings in afternoon.
  - All group leaders should participate in meetings, all team members should participate in morning safety meetings.
- Radio Distribution List
  - Incident Commander (if on site)
  - Site Commander
  - Incident command Post (base station)
  - Fire Fighting Group Leader
  - Landfill Staff and Equipment Group Leader
  - Health and Safety Group Leader
  - Logistics Support Group Leader
  - Engineering Support Group Leader (if on site)
  - Spotters working with heavy equipment (or PCS radios can be used).
- Off-Site Communications
  - Achieved via telephone (land line or cellular).
  - Communications logs should be maintained.

- Critical decisions / information should be shared to all impacted team members during morning or afternoon de-briefings.

- Site Security
  - Key elements of security include:
    - Accountability / Log in
    - Keeping unauthorized people off site.
  - Area of fir should be secured. On large fires, landfill property should be closed to non-essential people.
  - Security should be established at gate to control access and to sign in and sign out all people coming on site.
- Public and Media Liaison
  - Managing Public Relations
    - Access to site restricted, security put in place.
    - Public relations person appointed and fully informed.
    - Fire fighting team instructed to direct questions to public relations person.
    - News releases provided at key times.
    - Publish the Public Interaction Plan (see below for more details)
    - Briefing and photo opportunities should be provided to newspaper media.
    - Press coverage to be positive and accurate.
    - Media Liaison Spokesperson must provide cohesive, factual and timely information.
    - Issue press releases.
    - All fire-staff (including fire-fighters) should direct incoming questions or Media Liaison.

The "Public Interaction Plan" will identify the project goals, and methodology. It will identify points of contact and time schedule (which may fluctuate). The school schedule will be reviewed and they will be regularly contacted and alerted if for some reason (due to school schedule moving to an all year round program) school remains in operation while the pilot project is underway. There will be a website created on the county web that will be updated as the project develops with pictures, and description of the progress. County of Hawai`i E-mail distribution to over 3,000 readers on a weekly basis will be notified of the project and kept up to date of the progress. There will be, as mentioned, a contact point for expressing appreciation and possibly complaints regarding the burning landfill situation. Weather patterns during the project will be closely monitored as strong winds could impact the surrounding area. These will all be responded to in a timely manner, as set forth currently by the Mayor, who as you may recall was the County of Hawai`i Civil Defense Administrator for many years prior to being Mayor. The Mayor has very strict public notification rules that will be adhered to on this project as well as natural or other manmade disasters.

Copy to be forwarded to:

Brian P. Riedel
Assistant Regional Counsel (ORC-2)
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3924 tel.
(415) 947-3570 fax
riedel.brian@epa.gov

EPA REGION IX

ENFORCEMENT ACCOUNTS RECEIVABLE CONTROL NUMBER FORM

PART I. TO BE COMPLETED BY ORIGINATING OFFICE
(Attach a copy of the final order and transmittal letter to Defendant/Respondent; Route to P-4-2)

A. This was originated by: John Broch (Name of contact person) 9-26-08 (Date)

in the AIR-5 (Office) at 2-3999 (Phone Number)

B. ☐ Non-SF Jud. Order/Consent Decree. *(USAO COLLECTS)*
☒ Administrative Order/Consent Agreement *(FMO [P-4-2] COLLECTS PAYMENT)*
☐ SF Jud. Order/Consent Decree. *(FMO [P-4-2] COLLECTS)*

C. ☒ This is an original debt ☐ This is a modification

D. Name of Person and/or Company/Municipality making the payment Waste Management of Hawaii

Total Dollar Amount of Receivable $ 33,500 *(If in installments, attach schedule of amounts and respective due dates)*
Effective date: 9/26/08

Case Docket Number

Superfund Site-Specific Account Number

Designated Regional/HQ Program Office

PART II. TO BE COMPLETED BY LOCAL FINANCIAL MANAGEMENT OFFICE (P-4-2)

The IFMS Accounts Receivable Control Number BD (Date)

If you have any questions, call: Connie S. Ely (see below for address) at (513) 487-2075
(Name of Contact) (Phone Number)

in the Office of the Comptroller

PART III. TO BE ROUTED BY THE LOCAL FINANCIAL MANAGEMENT OFFICE (P-4-2)

JUDICIAL ORDERS: *Copies of this form with an attached copy of the front page of the final Judicial Order should be mailed to:*

1. Debt Tracking Officer
   Environmental Enforcement Section
   Department of Justice/Rm. 1647D
   POBox 7611, Benjamin Franklin Station
   Washington, DC 20044
2. Originating Office (ORC)
3. Designated Program Office

ADMINISTRATIVE ORDERS: *Copies of this form with an attached copy of the front page of the Administrative Order should be sent to:*

1. Originating Office
2. Designated Program Office
3. Regional Hearing Clerk (ORC)

5/23/90

4411 Montgomery Road
Mail Code: NWD
Cincinnati, OH 45212

Manual CCDS/ICIS Collection Sheet (Rev12/12)

Name John Brock
Phone ( ) 2-3999
Date 9 / 26 / 08

A. CASE INFORMATION:

1. Enforcement Action Name ~~Case name~~ (Plant name); West Hawaii Landfill Specify if multiple plants ___
2. Enforcement Action ID: ~~DOCKET System # (Obtained from ORC Armsey or list)~~: R9-06-07
3. Court Docket/Regional Hearing Clerk Admin. Docket # (eg other court docket#, such as DOJ#):
4(a) EPA Lead Attorney: Brian Riedel
4(b) EPA Program Contact (if different):
5(a). CFR Authorizing Section 40 CFR Part 60 Subpart WWW
40 CFR Part 51, 40 CFR Part 60, 40 CFR Part 61, 40 CFR Part 62
Actual Statute(s) and Section(s) violated (Not authorizing section or CFR): 111(e) / , / ,
CAA 112 (Ab), CAA 113 (NOV), CAA 113A (AO), 113A(5)(A) (AO for NSR), CAA 113D, CAA 120, CAA 167 (AO for PSD),
CAA 205 (Mobile), CAA 303 Imminent Hazard), other
/ , / , / , / , / , / ,
5(b) Air Program(s) SIP, Title V, NESHAPs, NSR, PSD, CFC (Title VI), Other NSPS.
5(c) Air Pollutant(s) PM10, VOC, NOx, SOx, CO, THAPs, Pb, Other NMOC.
5 (d) How was Volation Disovered? FCE, PCE inspection, PCE records, other X Date Discovered 7/8/05
5 (e) Date NOV issued 4/5/06; NOV# R9-06-07
6. Authorizing section for administrative actions: 113 / , / , /
7. Administrative action date (AO): Date Issued/Completed
Administrative Penalty action date (APO): Date Issued/Filed Date Final Order
Civil Judicial action date (Referral/CD): Referral Lodged Referral Entered
Consent Decree Signed Consent Decree Closed Out
Other (Stipulated Dismissal/ other) Date:
8a. Was this a Multi-Media (i.e. Multi Statute) action? __ Yes;
8b, National Case (i.e. Multi-Regional) ? ____Yes;
8c, Headquarters Lead ~~Multi-Regional~~ case? ____ Yes
Check all that apply/make this action multi-media:___inspection __complaint __settlement __ SEP
Specify other media (CWA, RCRA, EPCRA, other)
9. Was the Agency activity taken in response to Environmental Justice concerns? __ Yes X No
Check all that apply: __Low Income __Minority Population __Low Income&Minority Population
__Tribal ___Voluntary Self-Disclosure ___Other
10. If part of MOA Priority Activity, list the SIC code here.

Petroleum Refining: - Refinery Fuel Gas (REFFG)____; LDAR (LDAR)____;Flares _____; Benzene_____
Primary NonFerrous Metals (SIC: 3331, 3334, 3339
Metal Services (SIC: 3471, 3479)
Chemical Sector (SIC 2869, 2899):

CAA Air Toxics and NSR/PSD: (NSR)____; (PSD)____Coal-Fired Power Plant (SIC 4911)____
Surface Coating (SIC 3479) Acid (SIC 2911, 2819, 2865, 2869, 2899)
Glass (SIC 3211, 3229, 3296) Cement (SIC 3241)
Other

B. FACILITY INFORMATION: (If more than 1 facility involved, list those with name, address, & AFS# here or on additional pages)
11. Facility Name West Hawaii Sanitary Landfill
12. Facility Address: Street: 71-111 Queen Kahumanu Hwy. City: Waikoloa St: HI Zip: 96738
13(a) Primary 4-digit SIC-code 4953, b) Other 4-digit SIC-codes ____, ____, ____, ____
14. Facility Identification EPA AFS Plant ID # for the facility 15-001-00106

a) Additional Facility Name
Additional Facility Address: Street: City: St: Zip:
Additional (a) Primary 4-digit SIC-code____, b) Other 4-digit SIC-codes ____, ____, ____,
Additional Facility Identification EPA AFS Plant ID # for the facility

b) Additional Facility Name
Additional Facility Address: Street: City: St: Zip:
Addltional (a) Primary 4-digit SIC-code____, b) Other 4-digit SIC-codes ____, ____, ____,
Additional Facility Identification EPA AFS Plant ID # for the facility

E. CASE CONCLUSION - SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP) INFORMATION:

20. Categories of SEP(s) (Check all appropriate categories; if none proceed to #25)

__ (a) Public Health
__ (b) Pollution Prevention (Complete Q. 24)
__ (1) equipment/technology modifications
__ (2) process/procedure modification
__ (3) product reformulation/redesign
__ (4) raw materials substitution
__ (5) improved housekeeping/O&M/training/inventory-control
__ (6) in-process recycling
__ (7) energy efficiency/conservation
__ (c) Pollution Reduction (Complete Q. 24)
__ (d) Environmental Restoration and Protection
__ (e) Assessments and Audits
__ (f) Environmental Compliance Promotion
__ (g) Emergency Planning and Preparedness
X (h) Other SEP category (specify) Landfill fire

21. SEP description Test procedures used in California to extinguish a landfill fire in Hawaii

22. Cost of SEP (Cost calculated by the Project Model is preferred): $ 184,400

23. Is Environmental Justice addressed by SEP? __ Yes X No

24. Quantitative environmental impact of SEP: pollutants and/or chemicals and/or waste-streams, and amount of reductions/eliminations (e.g., emissions/discharges)

Pollutant	Avg. Annual Units Amount		Destination Media (e.g., air, water, land)	
_____	_____	_____	_____	Air
_____	_____	_____	_____	Air
_____	_____	_____	_____	Air
_____	_____	_____	_____	Air
_____	_____	_____	_____	Air

F. CASE CONCLUSION - PENALTY (IF THERE IS NO PENALTY, ENTER 0 AND PROCEED TO #27)

25.(a) Assessed Penalty $ 33,500
25.(b) (if shared) Federal share $ _____
25.(c) (if shared) State or Local share $ _____
26. For multi-media actions, Federal Penalty Assessed by statute:

Statute	Amount
_____	$ _____
_____	$ _____
_____	$ _____

G. CASE CONCLUSION - COST RECOVERY

27. Amount cost recovery awarded:

EPA: $ _____
State/Local Government $ _____
Other: $ _____