DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, PACIFIC
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DEPARTMENT OF HEALTH
2004 DEC 13 P 12:04

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Ser OPHEV/ 2197
10 DEC 2004

Dr. Keith Kawaoka
Hazard Evaluation and Emergency
Response Office
State of Hawaii, Department of Health
919 Ala Moana Blvd., 2nd Floor
Honolulu, HI 96814

Dear Dr. Kawaoka:

Subj: REQUEST FOR NO FURTHER ACTION DETERMINATION FOR THE RED HILL OILY WASTE DISPOSAL FACILITY

Our letter of May 13, 2004 requested your concurrence with a No Further Action (NFA) determination for unrestricted use at the Red Hill Former Oily Waste Disposal Facility (OWDF) site. However, Mr. Michael Miyasaka of your staff indicated that neither of the tables enclosed with our letter included information that fully addressed petroleum contaminated areas where the Total Petroleum Hydrocarbon (TPH) concentrations were above the 5,000 mg/kg DOH Tier I Action Level at the OWDF site and that this information must be included for an unrestricted use NFA determination in accordance with the requirements of Hawaii Administrative Rules (HAR), Chapter 11-451: Hawaii State Contingency Plan (SCP) (DOH 1997) and the Technical Guidance Manual (TGM) (DOH 2000).

On July 9, 2004, we submitted a memorandum entitled *Summary and Conclusions Supporting No-Further Action Recommendations, Eleven Exposure Areas of Concern, Red Hill Oily Waste Disposal Facility, Halawa, Oahu* to Mr. Miyasaka for his review. Mr. Miyasaka requested that a meeting be held to discuss DOH concerns on how the Navy is addressing TPH concentrations that were above the 5,000 mg/kg DOH Tier I Action Level. On July 16, 2004, we met with Mr. Miyasaka to review the conclusions and recommendations presented in the memorandum, discuss DOH concerns, and evaluate potential resolutions. DOH agreed with the Navy's NFA recommendations for 9 of the 11 Exposure Areas of Concern (EAOCs). However, DOH expressed concern that NFA may not be warranted for 2 EAOCs: the Underground Piping and Oily Waste Delivery System Area (UPD) and the Unauthorized Discharge Area (UDA). DOH indicated that additional information and evidence would be required before they can agree with the Navy's NFA recommendations for these two EAOCs.

The attached Table 1 addresses the SCP criteria for the entire OWDF site and presents in the Site-Specific Response columns the data and information that were documented in the Removal Action Report and the Phase I and Phase II RI Reports for the Red Hill OWDF (OHM 1995, Ogden 1996, Earth Tech 2000) and the TPH Report (Earth Tech 2002). Table 2 addresses TGM Section 9 criteria for closure of sites impacted by petroleum hydrocarbons, and describes the site conditions that justify closure with

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respect to each criterion. The Summary and Conclusions Supporting No Further Action Recommendation for Two EAOCs provides the evidence supporting NFA for the UPD and UDA areas as discussed during the July meeting. As indicated in Tables 1 and 2 and the Summary paper, the combined investigation results demonstrate that the SCP and TGM closure criteria have been met. Therefore, the Navy requests that the DOH concur with a NFA determination for unrestricted use at the Red Hill Former OWDF site in accordance with the requirements of HAR, Chapter 11-451: SCP and the TGM.

Should you have any questions regarding this letter, please contact Mr. Wesley Ching of our Intergrated Product Team Hawaii Environmental Restoration Division at (808) 474-0918.

Sincerely,

Melvin Z. Waki

MELVIN Z. WAKI, P.E.
Business Line Manager
Environmental

Encl:
(1) Site Map
(2) Table 1 – State Contingency Plan Criteria
(3) Table 2 – Technical Guidance Manual Criteria
(4) Summary and Conclusions Supporting NFA Recommendation for Two EAOCs

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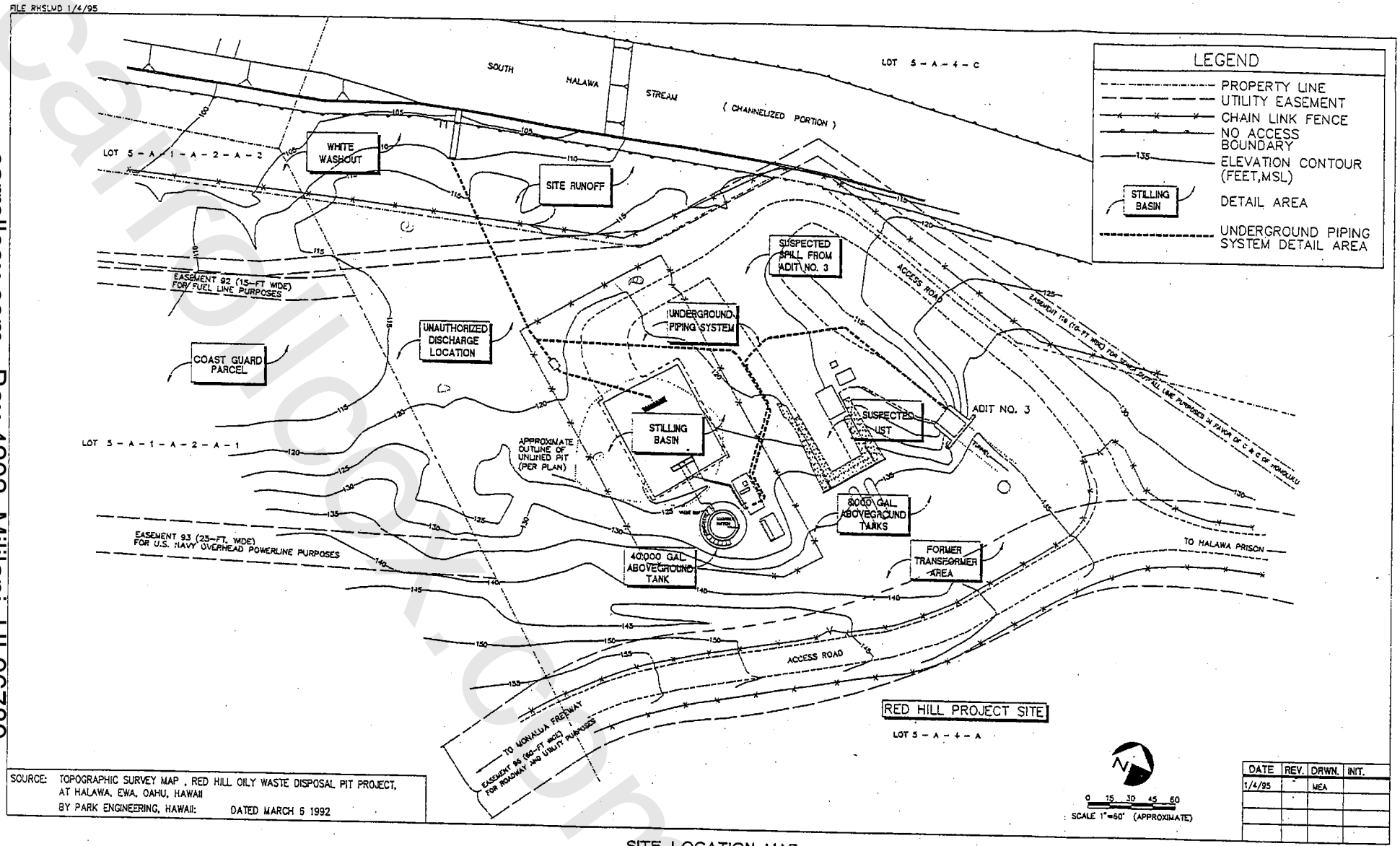

SOURCE: TOPOGRAPHIC SURVEY MAP , RED HILL OILY WASTE DISPOSAL PIT PROJECT, AT HALAWA, EWA, OAHU, HAWAII BY PARK ENGINEERING, HAWAII: DATED MARCH 6 1992

DATE	REV.	DRWN.	INIT.
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SITE LOCATION MAP
DETAIL AREAS
RED HILL RI - PHASE 1

FIGURE 1-3

ENCLOSURES (1)

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Table 1. Hawaii State Contingency Plan Criteria for Site Closure and Site-Specific Responses, Red Hill Former OWDF

Criterion	Description	Site-specific Response
11-450-10(a) Criteria for No Further Action	"A facility… shall no longer be subject to response actions… when the department determines that no further response action appears appropriate based on all of the information that may then be reasonably obtained. In making such a determination, the department shall consider [a]ny appropriate information to determine whether the facility does not meet any of the minimum threshold criteria contained in 11-450-9(b)(2) [see below] and therefore, taking appropriate response action is not appropriate; or if response actions taken have been sufficient to address the release or threat of release in accordance with the requirements of these rules."	The TPH (gasoline or diesel) cleanup goal specified for the Stilling Basin soil Removal Action was conservatively set at 100 mg/kg (OHM 1995). This cleanup goal was not based upon technical criteria such as potential risks to receptors or possible leaching to groundwater; these levels are significantly greater than this goal. Fifty-three confirmation soil samples were collected after excavation of soil from the Stilling Basin (OHM 1995). TPH concentrations above the 100 mg/kg cleanup goal were detected in only 12 of the confirmation soil samples. The maximum TPH concentration detected among the confirmation samples (4,200 mg/kg) is below the 5,000 mg/kg DOH Tier I Action Level required by the State of Hawaii in the State Contingency Plan. The combined findings of the Removal Action (OHM 1995), both RI phases (Ogden 1996, Earth Tech 2000), and the TPH characterization investigation (Earth Tech 2002) indicate that the remaining chemicals (petroleum hydrocarbons) at the site are limited in both concentration and extent, and that additional response action is therefore not warranted.
11-450-9(2)(b) Minimum Hazard Threshold Criteria	A. Actual or probable release to groundwater which is a drinking water supply	Hydrogeologic conditions prevent site constituents from reaching the deep basal (potable) aquifer that underlies the site. Hydrogeologic data presented in the Phase I and Phase II RI reports indicate that the petroleum hydrocarbons detected in the (non-potable) on-site perched groundwater cannot migrate vertically downward through the three low-permeability confining formations that overlie the basal aquifer (Ogden 1996, Earth Tech 1999). No TPH or PAHs were detected in any of the basal groundwater samples collected during Phase II groundwater sampling (Earth Tech 1999).
	B. Actual or probable release to surface water which is a drinking water supply	The Phase II RI Report (Earth Tech 1999) presented strong evidence (based on groundwater monitoring data representing the upper level perched groundwater) supporting the conclusion that petroleum hydrocarbons detected in the perched groundwater are naturally attenuating, and will not migrate to the basal aquifer. Note also that surface waters in the vicinity of the site are not suitable for use as drinking water supplies (Earth Tech 1999).
	C. Actual or probable release to air that poses a threat to public health	The Phase I RI Report (Ogden 1996) characterized the nature and extent of volatile organic compounds (VOCs) in soil, conducted a preliminary risk evaluation, and concluded that chemicals potentially released to the air pose no significant threat to human health.
	D. Actual or probable release to and extensive contamination of soil that poses a direct contact hazard due to uncontrolled facility access	Results of the Phase I RI (Ogden 1996), Phase II RI (Earth Tech 2002), and TPH characterization investigation (Earth Tech 2002) indicate that the distribution of chemicals in soil is characterized by isolated discrete occurrences. The Phase I and Phase II RI risk assessments demonstrated that direct contact with surface and near surface soils that may occur due to uncontrolled facility access does not pose significant risks.
	E. Actual or probable existence of uncontrolled hazardous substances, pollutants, or contaminants, such as leaking containers or impoundments, that poses a direct contact hazard due to uncontrolled facility access.	The Phase I and Phase II RIs (Ogden 1996, Earth Tech 2000) have demonstrated that current chemical concentrations at the site pose no direct contact hazards due to uncontrolled facility access.
	F. Actual or probable adverse impact to natural resources;	The Phase I and Phase II RI reports (Ogden 1996, Earth Tech 2000) provide strong evidence that site-related chemicals have not impacted on-site natural resources or wetlands, and that future impact is extremely unlikely, because (a) the petroleum constituents in soil are remaining onsite and decreasing in concentration due to natural attenuation and (b) the perched groundwater does not discharge to surface water.
	G. Actual or probable imminent danger of fire or explosion.	No free product has been detected in groundwater (Ogden 1996, Earth Tech 2000) and the levels of petroleum constituents remaining in soil (Earth Tech 2002) are well below levels that could pose fire or explosion hazards.

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ENCLOSURES (2)

Table 2: Technical Guidance Manual Criteria for Petroleum-Impacted Sites and Site-Specific Responses, AST, Red Hill Former OWDF

Criterion No.	Criterion	Site-Specific Response
1	The contaminant source area has been characterized, and the extent of the impact has been defined.	TPH-diesel was detected at isolated discrete soil sampling locations, indicating that the lateral and vertical extent of TPH-diesel in soil is not continuous. A TPH-diesel concentration above the DOH Tier 1 SAL was detected in only one sample (at 10 feet bgs) at the Former AST Area. The investigation results indicate that TPH-diesel concentrations above the site-specific characterization level requested by the DOH (25 mg/kg) are limited to depths between approximately 5 and 25 feet bgs.
2	The impacted soil does not create nuisance problems (odor).	The investigation results indicate that TPH concentrations above 25 mg/kg are limited to depths of 5 feet bgs or deeper, and no odors or other nuisance problems have been observed around the area.
3	The facility ensures that residual petroleum does not migrate off site (i.e., via groundwater) and negatively impact adjacent properties, groundwater extraction wells, or surface water bodies.	The investigation results indicate that TPH concentrations greater than 25 mg/kg in soil are limited to depths between approximately 5 and 25 feet bgs in the Former AST Area, away from the site perimeter. No surface water exists at the site, and potential for surface runoff from the site is low (Earth Tech 2000). Results of the hydrogeologic investigation (Earth Tech 2000) strongly support the conclusion that there is little or no potential for downward transport of constituents to the basal aquifer. This conclusion is supported by the groundwater monitoring data (Earth Tech 2000): No sheen, product, TPH, or fuel-related constituents have been detected in the basal groundwater, and no sheen or product has been detected in the perched groundwater at the OWDF (Earth Tech 2000).
4	The following TPH values are not exceeded: 5,000 mg/kg for TPH as oil or TPH as diesel, and 2,000 mg/kg for TPH as gasoline.	With the exception of one sample (collected at 10 feet bgs in the Former AST Area) TPH concentrations detected in all soil samples collected during the investigation were below the DOH criteria (Earth Tech 2002a).
	Based on recent discussions between the Navy, DOH, and EPA, it was agreed that the TPH concentrations listed in Criterion 4 should be used as screening criteria for delineation of petroleum contamination, but that cleanup to these levels is not required if the following criteria are met: The contaminant source area has been characterized, and the vertical and lateral extent of contamination has been delineated in accordance with an agreed-upon SAP.	The following evidence demonstrates that each criterion has been met: The vertical and lateral extent of TPH contamination has been characterized and delineated according to the DOH Tier 1 SALs, the site-specific TPH-diesel characterization level requested by the DOH (25 mg/kg), and the agreed-upon SAP (which documents the investigation approach and data quality objectives) (Earth Tech 2002b).
	Free-phase product is removed from the water table to the extent practicable in accordance with the TGM SCP (DOH 1997).	No free-phase product was detected in the borings for monitoring wells RH-MW08, RH-MW06 and RH-MW09 or any of the other borings advanced in the Former AST Area during the Phase II RI and TPH-diesel characterization investigations. No sheen or free-phase product was observed in any of the groundwater samples collected from existing monitoring wells after the OHM remedial action in 1995 (Ogden 1996, Earth Tech 2000).
	Risk assessments conducted in support of site characterization are consistent with DOH Tier 1, 2, or 3 RBCA methodology, consider both the direct contact pathway and potential threats to groundwater or surface water bodies, and demonstrate that no unacceptable risks to human health or the environment are associated with the TPH	Human health and ecological risk assessments were conducted for both RI phases in accordance with USEPA methodology (EPA 1989a, 1989b, 1991, 1997) to evaluate the potential threats represented by detected soil and groundwater concentrations. The risk assessments demonstrated that no unacceptable risks to human health or the environment are associated with the petroleum hydrocarbon compounds or any of the other chemicals detected at the OWDF

bgs below ground surface
EPA Environmental Protection Agency, United States
mg/kg milligram per kilogram
RBCA risk-based corrective action
SAL soil-action level
SAP sampling and analysis plan

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ENCLOSURES (3)
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Summary and Conclusions Supporting No-Further Action Recommendations For Two Exposure Areas of Concern, Red Hill Oily Waste Disposal Facility, Halawa, Oahu, Hawaii

The Navy recently submitted a letter "*Summary and Conclusions Supporting No-Further Action Recommendations, Eleven Exposure Areas of Concern, Red Hill Oily Waste Disposal Facility, Halawa, Oahu*" to the Hawaii Department of Health (DOH) on the July 9, 2004. Representatives of the DOH; Naval Facilities Engineering Command (NAVFAC), Pacific (Navy); and Earth Tech, Inc., (Earth Tech) met on Friday, 16 July 2004 to review the conclusions and recommendations presented in the letter, address DOH comments, and evaluate potential resolution to these comments. Meeting participants were: Mike Miyasaka (DOH), Wes Ching (Navy), John Fern (Earth Tech), and Wendell Wen (Earth Tech).

The DOH agreed with the Navy's NFA recommendations for 9 of the 11 Exposure Areas of Concern (EAOCs). However, DOH expressed concern that NFA may not be warranted for two EAOCs: the Underground Piping and Oily Waste Delivery System Area (UPD) and the Unauthorized Discharge Area (UDA). DOH indicated that additional information and evidence would be required before they can agree with the Navy's NFA recommendations for these two EAOCs. DOH comments and concerns regarding the UPD and UDA areas are summarized below.

BACKGROUND

UPD. The Phase I RI (Ogden 1996) reported TPH-diesel concentrations (19,000 mg/kg and 6,300 mg/kg) above the 5,000 mg/kg DOH Tier I soil action level for two surface soil samples collected in 1991. Although no TPH concentrations above the action level were detected at the UPD Area during the Phase II RI (Earth Tech 2000), DOH is concerned that TPH concentrations above the action level may still exist in surface soil at this EAOC. DOH agreed that the UPD area has been fully characterized for TPH and that the absence of elevated TPH detections during the Phase II RI (Earth Tech 2000) supports the conclusion that elevated TPH concentrations are very limited. However, DOH commented that the Phase II RI results are not sufficient to demonstrate that TPH concentrations in surface soil at the two Phase I RI exceedance locations are now below the DOH Tier I soil action level unless additional evidence is provided.

UDA. In 1991, TPH-diesel was detected at concentrations (29,000 mg/kg and 19,000 mg/kg) above the DOH Tier I soil action level in two Phase I RI surface soil samples. A TPH-residual fuels (>C24) concentration above the action level was detected in one Phase II RI surface soil sample (8,300 mg/kg) (Earth Tech 2000). DOH agreed that the UDA area has been fully characterized for TPH, and noted that the Phase II RI sampling results (DOH Tier I soil action level exceedance in only one sample) support the conclusion that the extent of elevated TPH concentrations is very limited at this EAOC. However, DOH commented that the Phase II RI results alone are not sufficient to show that TPH concentrations in surface soil at the two Phase I RI exceedance locations are now below the DOH Tier I soil action level. In addition, a small amount of soil was relocated from the former Stilling Basin to the UDA area during a removal action (OHM 1996). DOH is concerned about potential environmental impact to the UDA area due to relocation of this soil. DOH requested additional evidence to address their concerns regarding this EAOC.

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ENCLOSURES (4)

Table 1: Evidence Supporting NFA for the UPD and UDA

TGM Criteria (DOH 1997)	UPD Area	UDA
1. The contaminant source area has been characterized, and the extent of the impact has been defined.	TPH concentrations above the 5,000 mg/kg DOH Tier 1 SAL were detected in two surface soil samples collected during the Phase I RI (Ogden 1996). Additional sampling was conducted during the Phase II RI to fully characterize the source area and define the extent of contamination (Earth Tech 2000). All TPH-diesel concentrations detected in the Phase II RI samples were well below the 5,000 mg/kg DOH Tier 1 SAL (Earth Tech 2000).	TPH concentrations above the 5,000 mg/kg DOH Tier 1 SAL were detected in two surface soil samples collected during the Phase I RI (Ogden 1996). The extent of contamination was delineated during the Phase II RI (Earth Tech 2000). A TPH concentration (8,300 mg/kg) above the 5,000 mg/kg DOH Tier 1 SAL was detected in one of the Phase II RI samples (a surface soil sample). TPH was detected at 130 mg/kg in a subsurface soil sample collected 5 feet below the location of the exceedance. No TPH concentrations above the method reporting limit (48 mg/kg) were detected in any other soil samples collected at this EAOC during the Phase II RI. The results indicate that the extent of impacted soil is extremely limited both vertically and horizontally
2. The impacted soil does not create nuisance problems (odor).	No odors or other nuisance problems have been observed. PID testing of all samples indicated no organic vapors in the headspace	No odors or other nuisance problems have been observed. PID testing of the sample with the highest TPH concentration (8,300 mg/kg of TPH–residual fuels) detected no organic vapors in the headspace.
3. The facility ensures that residual petroleum does not migrate off site (i.e., via groundwater) and negatively impact adjacent properties, groundwater extraction wells, or surface water bodies.	No surface water exists at the Red Hill Oily Waste Facility site, potential for surface runoff is low, and little or no potential exists for migration to the basal aquifer (Ogden 1996, Earth Tech 2000). This conclusion is supported by the groundwater monitoring data (Earth Tech 2000): No sheen, product, TPH, or fuel-related constituents have been detected in the basal groundwater, and no sheen or product has been detected in the perched groundwater at the OWDF (Earth Tech 2000).	No surface water exists at the Red Hill Oily Waste Facility site, potential for surface runoff is low, and little or no potential exists for migration to the basal aquifer (Ogden 1996, Earth Tech 2000). This conclusion is supported by the groundwater monitoring data (Earth Tech 2000): No sheen, product, TPH, or fuel-related constituents have been detected in the basal groundwater, and no sheen or product has been detected in the perched groundwater at the OWDF (Earth Tech 2000).
4. The following TPH values (DOH Tier 1 SALs) are not exceeded: 5,000 mg/kg for TPH as oil or TPH as diesel, and 2,000 mg/kg for TPH as gasoline.	The Phase II RI (Earth Tech 2000) data indicate that TPH levels in soil at this EAOC are below the 5,000 mg/kg threshold for TPH as oil or diesel.	An exceedance of the 5,000 mg/kg DOH Tier 1 SAL was reported for only one of the samples collected during the Phase II RI: TPH–residual fuels were detected at 8,300 mg/kg in a surface soil sample (TPH-diesel was detected at 3,200 mg/kg in this sample). All other TPH concentrations detected during the Phase II RI were below the DOH criteria (Earth Tech 2000).
5. As indicated in the 2001 TPH Issue Paper prepared by the Navy, DOH, and EPA, it was agreed that the TPH concentrations listed in Criterion 4 should be used as screening criteria for delineation of petroleum contamination, but	Not applicable—the Phase II RI (Earth Tech 2000) data indicate TPH concentrations are below the levels listed in criterion 4.	The following evidence demonstrates that each criterion has been met: The vertical and lateral extent of TPH contamination has been characterized and delineated according to the DOH Tier 1 SALs,

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TGM Criteria (DOH 1997)	UPD Area	UDA
	reporting limits. 4. Site conditions have changed. After the removal action in 1996 (OHM 1996), the surface of the UPD was paved with asphalt. The locations where elevated TPH concentrations were detected are now covered with pavement; therefore, neither human nor ecological receptors are likely to contact soil at these locations, and no odor or other nuisance problems are associated with these locations. 5. No TPH was detected in any of the monitoring wells screened in basal groundwater at the site. The Phase II RI geologic and hydrologic investigation results indicate that the potential for transport of petroleum hydrocarbons from surface soil to the basal groundwater is insignificant or negligible (Earth Tech 2000). Conclusion: NFA is justified under the TGM (DOH 1997)	the maximum surface soil TPH concentration, indicating that the soil does not pose nuisance or odor problems. 6. Although a small amount of soil from the former Stilling Basin was relocated to the UDA during the removal action (prior to the Phase II RI), the extent of contamination in soil at this EAOC was thoroughly characterized, and found to be extremely limited. 7. Comparison of the Phase I and Phase II RI results indicates that TPH concentrations in surface soil decreased significantly (e.g., 19,000 mg/kg to 8,300 mg/kg) over the seven-year period from 1991 to 1998. These results strongly suggest that natural attenuation has occurred (i.e., biodegradation, evaporation, photo-oxidation—please see the following section: "*Natural Attenuation of Fuel Oil in Surface Soil*"). The data indicate an average annual attenuation rate greater than 1,500 mg/kg/year. Assuming that natural attenuation has continued over the 6-year period since 1998, an average annual attenuation rate of only 550 mg/kg/year would be sufficient to reduce the concentration from 8,300 mg/kg to the 5,000 mg/kg DOH Tier I soil action level. The data therefore suggest that current TPH concentrations in surface soil are likely to be well below the action level. 8. No petroleum contamination was detected in any of the basal groundwater monitoring wells, and the Phase II RI geologic and hydrologic investigation results indicate that the potential for transport of petroleum hydrocarbons from surface soil to the basal groundwater is insignificant or negligible (Earth Tech 2000). Conclusion: NFA is justified under the TGM (DOH 1997)

mg/kg	milligram per kilogram
bgs	below ground surface
DOH	Hawaii Department of Health
EAOC	Exposure area of concern
EPA	Environmental Protection Agency, United States
NFA	No-further-action recommended
PID	photoionization detector
RI	Remedial Investigation
SAL	Soil action level
SAP	sampling and analysis plan
TGM	Technical Guidance Manual (DOH 1997)
TPH	total petroleum hydrocarbons
OWDF	Red Hill Oily Waste Disposal Facility

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Date to HEER	12/13/2004	*Due Date:*	*Correspondence Log Number:*
Comments	W/Endosures		

Date	*Assign To*	*Action*	*Brought Forward*	*Returned*	*Result*

ACTIVITY HISTORY FOR DOCUMENT LOG

Date	Assign To	Action	Brought Forward	Returned	Result
12/13/04	Keith Kawaoka	Review for NFA.	12/14/2004		Forward to HEER Clarence
12/20/04	Clarence Callahan	Review for NFA.	12/21/04		Forward to Mike
12/21/04	Mike Miyazaki	Review for NFA			

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