Fourth Quarter 2005

Groundwater Sampling Report
RED HILL FUEL STORAGE FACILITY, HAWAII

February 2006

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Prepared under:

Contract Number N62742-01-D-1806, CTO 0013

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EXECUTIVE SUMMARY

The Department of the Navy, Naval Facilities Engineering Command, Pacific Division (NAVFAC PACIFIC) has retained Dawson Group, Inc. (DAWSON) to perform groundwater monitoring activities at the Red Hill Fuel Storage Facility (FSF), Hawaii. The Red Hill FSF consists of 20 active underground storage tanks (USTs) operated by the Fleet Industrial Supply Center (FISC) Pearl Harbor. Figure 1, *Site Vicinity Map*, illustrates the location of the project site.

This work was performed under NAVFAC PACIFIC Contract Number N62742-01-D-1806, Contract Task Order (CTO) 0013. This document is the fourth quarterly report and summarizes the following: field investigation, IDW disposal, sample results, and conclusions and recommendations for the next sampling event.

Site Background

From 1998 to 2001, the Navy conducted an investigation at the facility to assess potential releases from the fuel storage facility. In February 2001, the Navy installed a one-inch diameter sentinel well (MW-V1D) to monitor for contamination of the basal aquifer underlying the storage facility (AMEC Earth and Environmental, Inc. [AMEC], 2002). Sentinel well MW-V1D was installed and completed at approximately 100 feet below grade (fbg). At the time of well completion, depth to water in MW-V1D was measured at 86 fbg. The groundwater level at the project site fluctuates from dry season to wet season (AMEC, 2002).

A second monitoring well (MW-V2S) was installed and completed above the water-bearing zone at approximately 52 fbg. This monitoring well is located southwest of sentinel well MW-V1D and does not contain either groundwater or product. MW-V2S was intentionally completed above the water-bearing zone in order to avoid creation of a possible direct conduit to the basal aquifer (AMEC, 2002).

In February 2001, groundwater samples collected from sentinel well MW-V1D contained total petroleum hydrocarbon (TPH) concentrations ranging from 0.883 milligrams per liter (mg/L) to 1.05 mg/L and total lead ranging from 0.0104 mg/L to 0.015 mg/L. The maximum total lead concentration in the samples was equal to the primary drinking water standard of 0.015 mg/L for lead and exceeded the State of Hawaii Department of Health (HDOH) Tier 1 groundwater action level (GWAL) of 0.0056 mg/L (US Navy, 2004).

Following discussions with HDOH, a program was initiated to monitor the sentinel well MW-V1D and the Navy Public Works Center (PWC) potable water stilling basin for indications of contamination from the upgradient tank farm. The recommended parameters for analyses were TPH as diesel; TPH as gasoline; benzene, toluene, ethylbenzene, and total xylenes (BTEX); 1,2-dichloroethane (DCA); polynuclear aromatic hydrocarbons (PAHs); total lead; and 1,2-dibromoethane (EDB) (US Navy, 2004).

Field Activities

On December 6 and 7, 2005, three surface water samples (two primary and one duplicate) were collected from the PWC potable water stilling basin and analyzed for TPH as diesel, TPH as gasoline, 1,2-DCA, BTEX, methyl-tert-butyl ether (MtBE), total lead, and EDB.

On 6 December 2005, two groundwater samples (one primary and one duplicate) were collected from the sentinel well, MW-V1D and analyzed for TPH-D, TPH-G, 1,2-DCA, BTEX, total lead, and EDB.

Conclusions and Recommendations

The following conclusions are based on the data collected during this investigation.

Stilling Basin

- Concentrations of dissolved lead, naphthalene, 2-methylnaphthalene were detected above the laboratory MRLs. No constituents were detected at concentrations above the HDOH Tier 1 GWALs or HDOH drinking water standard.

Sentinel Well

- Concentrations of TPH as diesel, naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, fluoranthene, pyrene, benz(a)anthracene, chrysene, Benzo(a)pyrene and Benzo(g,h,i)perylene were detected above laboratory MRLs. No constituents were detected at concentrations above the HDOH Tier 1 GWALs.
- Dissolved lead was detected at concentrations above the laboratory MRL. The concentrations were below both the HDOH Tier 1 GWAL and the HDOH drinking water standard in the sentinel well samples. The December 2005 results were also less than the corresponding 2001 investigation results (AMEC, 2002). In both this quarter and the third quarter 2005, samples collected at MW-V1D contained lead concentrations below the HDOH Tier 1 GWAL and HDOH drinking water standard. It should be noted that in the first and second quarter 2005, samples collected from MW-V1D were not filtered prior to lead analysis. However in the last two quarters (third and fourth quarter 2005) samples were filtered prior to lead analysis.
- The groundwater in the upgradient sentinel well (MW-V1D) shows evidence of contamination in the basal aquifer by contaminants of potential concern.

Based on the findings during this investigation, DAWSON recommends the following actions:

- Installation of a dedicated pump within MW-V1D to avoid cross-contamination, to facilitate low-flow sampling methodology, to more efficiently sample the monitoring well, and to contribute to the repeatability of sampling methods.
- Continue to filter lead samples during collection and prior to analysis.
- Continue sampling at the stilling basin and the sentinel well during the next quarter (January through March 2006).

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ACRONYMS AND ABBREVIATIONS

ACRONYM/ ABBREVIATION	DEFINITION/MEANING
1,2 DCA	1,2 dichloroethane
AMEC	AMEC Earth and Environmental, Inc.
BTEX	benzene, toluene, ethylbenzene, and total xylene
CAS	Columbia Analytical Services
CFR	Code of Federal Regulations
COPC	contaminants of potential concern
COTR	Contracting Officer's Technical Representative
CTO	contract task order
DAWSON	Dawson Group, Inc.
DOT	Department of Transportation
DQO	Data Quality Objectives
DW	drinking water
EDB	1,2-dibromoethane
EM	Engineering Manual
EPA	United States Environmental Protection Agency
fbg	feet below grade
FISC	Fleet Industrial Supply Center
FSF	fuel storage facility
FSP	Field Sampling Plan
GWAL	groundwater action level
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Emergency Operations
HDOH	State of Hawaii Department of Health
IDW	investigation derived waste
IP	interface probe
IRP	Installation Restoration Program
mg/L	milligrams per liter
MRL	method reporting limit
MtBE	methyl tert-butyl ether
NAVFAC PACIFIC	Naval Facilities Engineering Command, Pacific
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
PWC	Public Works Center
QA	quality assurance
QC	quality control
RPM/NTR	Remedial Project Manager / Navy Technical Representative
SSHO	Site Safety and Health Officer
TPH	total petroleum hydrocarbons
U.S. Army	United States Department of the Army
UST	underground storage tank

ACRONYMS AND ABBREVIATIONS

ACRONYM/ ABBREVIATION	DEFINITION/MEANING
VOC	volatile organic compound
WP	Work Plan

1. INTRODUCTION

The Department of the Navy, Naval Facilities Engineering Command, Pacific Division (NAVFAC PACIFIC) has retained Dawson Group, Inc. (DAWSON) to perform groundwater monitoring activities at the Red Hill Fuel Storage Facility (FSF), Hawaii. The Red Hill FSF consists of 20 active underground storage tanks (USTs) operated by the Fleet Industrial Supply Center (FISC) Pearl Harbor. Figure 1, *Site Vicinity Map*, illustrates the location of the project site.

This work was performed under NAVFAC PACIFIC Contract Number N62742-01-D-1806, Contract Task Order (CTO) 0013. This document is the fourth quarterly report and summarizes the following: field investigation, IDW disposal, sample results, and conclusions and recommendations for the next sampling event.

1.1 Project Objectives

The project objective is to determine if petroleum-related groundwater contamination is present downgradient of the 20 active USTs. In order to achieve this objective, the following tasks will be conducted:

- Conduct quarterly sampling of surface water located in the stilling basin located at the potable water infiltration tunnel operated by the Navy Public Works Center (PWC).
- Conduct quarterly sampling of groundwater from the sentinel monitoring well (MW-V1D) located downgradient of the 20 USTs.
- Present data in a quarterly report, which will include a description of the nature and extent of contamination, if any.

1.2 Document Organization

The following presents the organization of this document:

- **Section 1 Introduction:** presents the project objectives, organization of this document, site location and description, and previous environmental action/studies performed at this site.
- **Section 2 Data Quality Objectives:** provides the data quality objectives for the groundwater monitoring program.
- **Section 3 Methodologies and Procedures**: describes the equipment decontamination, laboratory analysis, stilling basin sample collection, groundwater monitoring well sample collection, and storage of investigation derived waste (IDW).
- **Section 4 Investigation Results:** presents the groundwater monitoring well sample results, stilling basin sample results, trip blank analytical results, data quality review, and IDW disposal.
- **Section 5 Conclusions and Recommendations:** provides discussion of the sampling results and recommendations for the Site.
- **Section 6 References**: lists the references cited in the text.
- **Appendix A:** presents the Non-Hazardous Waste Manifest.

- **Appendix B:** presents the laboratory analytical results for the groundwater samples collected during December 2005.
- **Appendix C:** presents the monitoring well sampling logs from December 2005.

1.3 Site Location and Facility Description

The Red Hill FSF project site is located in Halawa Heights on Oahu, Hawaii. Access is via Halawa Valley Road, located north of the project site. Primary highways in the vicinity of the project site are Interstate Highways H-1 and H-3. Land adjacent to the north of the project site is occupied by Halawa High and Medium Security Facility and private businesses. Land to the south and west of the project site includes the Coast Guard Reservation. Moanalua Valley is located east of the facility (Figure 1, *Site Vicinity Map*).

The Red Hill FSF consists of 20 active USTs operated by Navy FISC Pearl Harbor. Each UST has a capacity of 12.5 million gallons. The facility is located approximately 100 feet above the basal aquifer. Approximately 1,550 feet hydraulically downgradient from the tank farm, the Navy PWC operates a potable water infiltration tunnel (Figure 2, *Site Plan*).

1.4 Previous Environmental Actions/Studies

From 1998 to 2001, the Navy conducted an investigation at the facility to assess potential releases from the fuel storage facility. In February 2001, the Navy installed a one-inch diameter sentinel well (MW-V1D) to monitor for contamination of the basal aquifer underlying the storage facility (AMEC Earth and Environmental, Inc. [AMEC], 2002). Sentinel well MW-V1D was installed and completed at approximately 100 feet below grade (fbg). At the time of well completion, depth to water in MW-V1D was measured at 86 fbg. The groundwater at the project site fluctuates from dry season to wet season (AMEC, 2002).

A second monitoring well (MW-V2S) was installed and completed above the water-bearing zone at approximately 52 fbg. This monitoring well is located southwest of sentinel well MW-V1D and does not contain either groundwater or product. MW-V2S was intentionally completed above the water-bearing zone in order to avoid creation of a possible direct conduit to the basal aquifer (AMEC, 2002).

In February 2001, groundwater samples collected from sentinel well MW-V1D contained TPH concentrations ranging from 0.883 milligrams per liter (mg/L) to 1.05 mg/L and total lead ranging from 0.0104 mg/L to 0.015 mg/L. The maximum total lead concentration in the samples was equal to the primary drinking water standard of 0.015 mg/L for lead and exceeded the State of Hawaii Department of Health (HDOH) Tier 1 groundwater action level (GWAL) of 0.0056 mg/L (US Navy, 2004).

Following discussions with HDOH, a program was initiated to monitor the sentinel well MW-V1D and the PWC potable water stilling basin for indications of contamination from the upgradient tank farm. The recommended parameters for analyses were TPH; BTEX; 1,2 DCA; PAHs; total lead; and EDB (US Navy, 2004).

2. DATA QUALITY OBJECTIVES

Environmental data are needed to: 1) determine if groundwater contamination is present at the project site; 2) determine the best course of action; and 3) characterize IDW wastewater for disposal.

Chemical data must be of sufficient quality and quantity to confirm the presence or absence of contaminants of potential concern (COPC) in the groundwater beneath the Red Hill FSF. The COPCs for this investigation include TPH as diesel and as gasoline; BTEX; MtBE; 1,2 DCA; total lead; and EDB. The data quality objectives were designed to comply with the HDOH's *Technical Guidance Manual for Underground Storage Tank Closure and Release Response, Second Edition* (HDOH, 2000) and *Risk-Based Corrective Action and Decision Making at Sites With Contaminated Soil and Groundwater, Volume I and II* (HDOH, 1996).

The screening levels for this investigation will draw on the HDOH Tier 1 GWALs for sites receiving less than 200 centimeters of rainfall per year and threatening a drinking water source (HDOH, 2000).

For reference purposes, the HDOH Environmental Action Levels (EALs) for sites greater than 150 meters from a surface water body where groundwater is a current or potential source of drinking water (HDOH, 2005) have been included. However, it should be noted that the 2000 Tier 1 GWALs are the governing guidelines for the site as required by the HDOH's UST regulations.

To evaluate the absence or presence of contaminants, the following quality criteria will be followed:

1) Laboratory analytical methods will provide reporting limits that are lower than regulatory action levels,

2) Chemical analyses of COPC will be performed using EPA publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition* methodology (EPA, 1998), and

3) Laboratory chemical data will be used to assess each analyte's concentration exceeding HDOH Tier 1 GWALs.

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3. METHODOLOGIES AND PROCEDURES

3.1 Equipment Decontamination

All water-level measuring and water sampling equipment was decontaminated at the start and end of the project, as well as between locations, to reduce the possibility of cross-contamination. The equipment was first washed in potable water and non-phosphate detergent. Then it was rinsed in potable water, rinsed in deionized/distilled water, sprayed with isopropyl alcohol, and rinsed with deionized/distilled water. Decontamination washwater was placed in a Department of Transportation (DOT)-approved, steel, 30-gallon drum and handled appropriately as described in detail in Section 5.3, *Investigation Derived Waste.*

3.2 Laboratory Analysis

The laboratory used standard analytical methods as outlined in the EPA's publication *SW846 – Test Methods for Evaluating Solid Waste, Third Edition* (EPA, 1998). The laboratory followed the EPA's method-specific quality control procedures as outline in *SW846.*

The groundwater samples collected from the stilling basin and the sentinel well were analyzed by Columbia Analytical Services for the following parameters:

- TPH as Diesel and TPH as Gasoline using EPA Method 8015M;
- BTEX, 1,2-DCA, and MtBE using EPA Method 8260B;
- EDB using EPA Method 504.1;
- PAHs using EPA Method 8270C SIM/PAHs; and
- Total Lead by EPA Method 6020.

The analytical methods were requested by the NAVFAC PACIFIC in the Statement of Work (SOW) (U.S. Navy, 2004) and are industry standards. Site investigation activities were conducted in accordance with the *WP/FSP* (DAWSON, 2005b) and the *Project Procedures Manual, U.S. Navy PACDIV Installation Restoration Program* (IRP) (PACDIV, 1998). Copies of laboratory reports and chain-of-custody records for groundwater samples are included in Appendix B, *Laboratory Reports and Chain-of-Custody Records for Primary and QC Groundwater and Stilling Basin Samples.*

3.3 Stilling Basin Sampling Methodology

Previously when sampling the stilling basin, no entry was permitted due to the characteristics of the stilling basin, which identified it as a permit-required confined space. Prior to this event, samples at the stilling basin were collected by lowering a sampling system which was a combination of a polyvinyl chloride (PVC) casing and a disposable bailer, where the bailer was inserted inside the PVC casing, and an IP probe was attached to the outside of the PVC casing. Together, the assembly was lowered to approximately six inches above the water surface, and then the bailer was lowered into the water to collect a sample. Once full, the bailer was raised into the PVC casing and the assembly was raised up through the entrance hatch, where the sample bottles were filled.

3.3.1 Installation of Temporary Well Conduit

On 28 June 2005, a temporary well conduit was installed at the PWC potable water stilling basin to increase the repeatability of sample collection, and to allow more efficient sampling of the groundwater. In order to install this conduit, entry into the stilling basin was allowed. A confined space entry permit was completed (Appendix C), the air within the stilling basin area was monitored (for combustible gases, oxygen, carbon dioxide, and methane), and a safety retrieval line with tripod and fall protection harness was used by the entrant. Each section of the conduit was lowered by rope to the entrant from the entrance hatch.

The bottom of the conduit was comprised of a 4-inch PVC end cap and 25 feet (5-foot sections) of factory-slotted (0.010), 2-inch diameter, schedule-40 polyvinyl chloride (PVC) screen. The sections, once lowered, were assembled by the entrant at the catwalk and secured to the outer side of the base of the ladder cage with heavy duty cable ties. The bottom of the screened interval was installed to be flush with the bottom of the PWC stilling basin. According to measurements taken from the catwalk, the screen was set in 23.1 feet of water.

Attached to the top of the screened PVC section was approximately 60 feet of 2-inch diameter, schedule-40 PVC (10-foot sections) casing. The sections were lowered to the entrant who attached them to the already-in-place sections of screen. Every 5 feet, the conduit was secured to the outer side of the ladder cage with heavy duty cable ties. The top of the conduit was secured with a monitoring well compression cap.

Once the conduit installation was completed, the safety retrieval line with tripod and fall protection harness was disassembled. The conduit was installed at a height so that future entry into the stilling basin can be avoided.

3.3.2 Surface Water Sampling Methodology

Access to the stilling basin requires opening an entrance hatch (approximately 24 inches in diameter). A lockout/tagout procedure was used to prevent accidental closure. From the open entrance hatch, the depth-to-water to the nearest 0.01 foot was measured using an interface probe (IP) through the well conduit. The measurement and time were recorded on the Surface Water Field Sampling Log (Appendix D, *Monitoring Well Sampling Forms*).

The samples were then collected using a new weighted, disposable, single-check valve bailer that remained sealed in plastic (by the manufacturer) until use. The bailer was equipped with a bottom-discharging device. The bailer was lowered to the water surface through the well conduit and the bottom was submerged in the surface water. Once full, the bailer was raised through the well conduit and through the entrance hatch, where the samples bottles were filled. This procedure was repeated until all required primary and field duplicate (QC) samples were collected.

3.3.3 Field Quality Control Sampling

Surface water field duplicate (QC) samples were collected once per sampling event, following the sample collection procedures listed in Section 6.2.2, *Surface Water Sampling Methodology*.

A laboratory-supplied trip blank was placed in the sample cooler containing the VOC samples to be shipped to the laboratory.

A temperature blank was placed in one sample cooler per shipment to be shipped to the laboratory.

3.4 Sentinel Well Sampling Methodology

This section describes the sampling methodology employed to collect groundwater samples.

3.4.1 Measurement of Static Water Level and Detection of an Immiscible Phase

Before sampling, the depth to standing water, depth to an immiscible layer (if any), and the total depth of the well were measured to the nearest 0.01 foot using an IP to provide baseline data. The data were recorded on the Monitoring Well Field Sampling Log (Appendix B).

In accordance with the SOW, if an immiscible phase is detected with the IP, the Project Manager and the Navy RPM/NTR are to be notified immediately. No groundwater sample is collected unless otherwise directed by the Project Manager and/or Navy RPM/NTR.

If no immiscible phase is detected with the IP, the measurements of depth to water and total depth of the well are used to calculate the volume of water in the well and the amount of water to be purged, as well as provide information on the integrity of the well (e.g., identification of siltation problems).

3.4.2 Well Purging Methodology

Purging was accomplished by removing groundwater from the well using a dedicated bailer approximately 12 feet in length and 0.5 inch in diameter attached to a new, dedicated rope. The bailer was lowered into the well with as little disturbance of the water as possible to minimize aeration of the water in the well. Once the bailer was full, it was slowly brought out of the water and the water was transferred to a clean container for evaluation of field parameters. The purge water was evaluated on a regular basis during purging and analyzed in the field for temperature, pH, specific conductivity, salinity, dissolved oxygen, redox potential, and turbidity using a YSI® water quality meter. At least four readings were taken during the purging process. The purging procedure was repeated until the calculated purge volume was removed or when three consecutive field parameter measurements had stabilized to within approximately 10 percent. All information was recorded on the Monitoring Well Field Sampling Log (Appendix B). The purge water was placed in the 30-gallon, steel drum located onsite.

3.4.3 Sample Collection Procedures

The sentinel well was sampled when groundwater within it was representative of aquifer conditions and after it had recovered sufficiently to provide enough volume for the groundwater sample. A period of no more than two hours elapsed between purging and sampling to prevent groundwater interaction with the casing and atmosphere. Depth to water was measured and recorded prior to sampling to demonstrate the degree of recovery of the well.

The bailer was lowered as described in Section 3.4.2, and once the bailer was full, it was brought out of the water and the water transferred directly into the laboratory-supplied containers. This procedure was repeated until all required primary and field duplicate (QC) samples were collected.

3.4.4 Field Quality Control Sampling

Groundwater field duplicate (QC) samples were collected once per sampling event, following the sample collection procedures listed in Section 3.4.3, *Sample Collection Procedures.*

A laboratory supplied trip blank was placed in the sample cooler containing the VOC samples to be shipped to the laboratory.

A temperature blank was placed in one sample cooler per shipment to be shipped to the laboratory.

3.5 Storage of Investigation Derived Waste

IDW generated during this investigation included monitoring well purge water and decontamination wastewater totally less than 5 gallons. Wastewater was stored in a 30-gallon, DOT-approved, steel drum. The drum was taken to an offsite recycling facility on 8 February 2006. The non-hazardous waste manifest is included in Appendix A of this report.

4. INVESTIGATION RESULTS

4.1 Stilling Basin Water Sample Results

Three surface water samples (two primary and one duplicate) were collected from the PWC potable water stilling basin and analyzed for TPH-D, TPH-G, 1,2-DCA, BTEX, MtBE, dissolved Lead, and EDB on December 6 and 7 2005. The results are presented in *Table 1, Summary of Groundwater Sample Results* of this report. The laboratory analytical reports are presented in *Appendix A, Laboratory Reports and Chain-of-Custody Records for Primary and QC Groundwater and Stilling Basin Samples.*

4.1.1 Dissolved Lead

Lead samples were collected in the field with a bailer and transferred to unpreserved sample bottles. Those sample bottles were brought to the Dawson office and filtered with a 0.45-micron filter into preserved sample bottles using a peristaltic pump and new polyethylene tubing. Lead was detected above the laboratory method reporting limits (MRLs) at concentrations ranging from 0.00002 mg/L to 0.00014 mg/L (Table 1). These concentrations were below the HDOH GWAL of 0.0056 mg/L (HDOH, 2000) and the HDOH drinking water standard of 0.015 mg/L (HDOH, 2002).

4.1.2 Total Petroleum Hydrocarbons (TPH)

TPH as diesel was not detected above the laboratory MRLs in the any of the stilling basin samples (Table 1).

TPH as gasoline was not detected above the laboratory MRL in any stilling basin samples (Table 1).

4.1.3 1,2-Dibromoethane (EDB)

EDB was not detected above the laboratory MRLs in any stilling basin samples (Table 1).

4.1.4 Volatile Organic Compounds (VOCs)

No VOCs were detected above the laboratory MRLs in any stilling basin samples (Table 1).

4.1.5 Polynuclear Aromatic Hydrocarbons (PAHs)

Naphthalene and 2-Methylnaphthalene were detected above the laboratory MRL in sample RH-B-010 and the duplicate sample RH-B-011. The concentrations of naphthalene were 0.000036 mg/L in sample RH-B-010 and 0.000024 mg/L in duplicate sample RH-B-011. Concentrations of 2-Methylnaphthalene were 0.000038 mg/L in sample RH-B-010 and 0.000022 mg/L in the duplicate sample RH-B-011. No other PAHs were detected above the laboratory MRL in any stilling basin samples (Table 1).

4.2 Sentinel Well Groundwater Sample Results

Two groundwater samples (one primary and one duplicate) were collected from the sentinel well, MW-V1D and analyzed for TPH-D, TPH-G, 1,2-DCA, BTEX, MtBE, dissolved Lead, and EDB on 6 December 2005. The results are presented in Table 2, *Summary of Groundwater Sample Results, MW-V1D,* of this report. The laboratory analytical reports are presented in Appendix A.

4.2.1 Dissolved Lead

Lead samples were collected in the field with a bailer and transferred to unpreserved sample bottles. Those sample bottles were brought to the Dawson office and filtered with a 0.45-micron filter into preserved sample bottles using a peristaltic pump and new polyethylene tubing. Lead was detected above the laboratory MRL at concentrations of 0.00006 mg/L and 0.00004 mg/L in the primary and duplicate samples, respectively (Table 2). Both of these results were below the HDOH GWAL of 0.0056 mg/L (HDOH, 2000) and below the HDOH drinking water standard of 0.015 mg/L (HDOH, 2002).

4.2.2 Total Petroleum Hydrocarbons (TPH)

TPH as diesel was detected at concentrations of 0.670 mg/L in sample RH-W-007 and 0.740 mg/L in duplicate sample RH-W-008 (Table 2). The laboratory report noted that both of the chromatographic fingerprints of the samples did not resemble a petroleum product.

4.2.3 1,2-Dibromoethane (EDB)

EDB was not detected above the laboratory MRLs in the sentinel well sample (Table 2).

4.2.4 Volatile Organic Compounds (VOCs)

VOCs were not detected above the laboratory MRLs in any sentinel well samples (Table 2).

4.2.5 Polynuclear Aromatic Hydrocarbons (PAHs)

- Naphthalene was detected above the laboratory MRL at concentrations of 0.00051 mg/L and 0.00048 mg/L.
- 2-Methylnaphthalene was detected above the laboratory MRL at concentrations of 0.000098 mg/L and 0.00011 mg/L.
- Acenaphthene was detected above the laboratory MRL at concentrations of 0.000061 mg/L and 0.000058 mg/L.
- Dibenzofuran was detected above the laboratory MRL in both samples at a concentration of 0.00015 mg/L.
- Fluorene was detected above the laboratory MRL at concentrations of 0.000058 mg/L and 0.000050 mg/L.
- Phenanthrene was detected above the laboratory MRL at concentrations of 0.00010 mg/L and 0.000059 mg/L.
- Fluoranthene was detected above the laboratory MRL at concentrations of 0.000062 mg/L and 0.000026 mg/L.

- Pyrene was detected above the laboratory MRL at concentrations of 0.000072 mg/L and 0.000026 mg/L.
- Benz(a)anthracene was detected above the laboratory MRL in one sample (primary) at a concentration of 0.000027 mg/L.
- Chrysene was detected above the laboratory MRL in one sample (primary) at a concentration of 0.000036 mg/L.
- Benzo(a)pyrene was detected above the laboratory MRL in one sample (primary) at a concentration of 0.000024 mg/L.

4.3 Trip Blank Analytical Results

One trip blank sample was submitted and analyzed for VOCs by EPA Method 8260b. The results are presented in Table 3, *Summary of Trip Blank Results*. The laboratory analytical reports are presented in Appendix A.

No VOCs were detected at concentrations above the laboratory MRLs in the trip blank sample.

4.4 Data Quality Review

4.4.1 Field Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) checks employed during the collection of field data and sampling activities included the following:

- Collection of samples and field measurements by DAWSON. DAWSON personnel were familiar with EPA protocols concerning equipment decontamination, sample collection, sample and project documentation, and QA/QC procedures.
- Use of certified clean laboratory sample containers.
- Preservation of sample integrity by chilling samples in the field and maintaining proper temperature until receipt at the laboratory.

4.4.2 Laboratory/Quality Control Data Assessment

As part of the QC of this project, the DAWSON completed a desktop review of the data packages received from Columbia Analytical Services. The desktop review included a review of the hold times, reagent blanks, surrogate recoveries, sample duplicates, matrix spike/matrix spike duplicates recoveries, relative percent differences, blank spike recovery and reporting limits. DAWSON concluded that the laboratory analyses meet QC criteria and can be used for the intended purpose. The duplicate results were consistent with all primary sample results and thus valid and useable.

Laboratory Data Assessment

Insufficient sample volume was received to perform a Matrix Spike Duplicate (MSD). A Laboratory Control Sample/ Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No anomalies associated with the analysis of these samples were observed.

Data Discrepancies

The relative percent differences between the primary and duplicate sample concentrations are presented in Tables 1 and 2. While it appears that the relative percent differences between the primary and duplicate are large, the values are below the HDOH Tier 1 GWALs. There were no significant data discrepancies between the primary and duplicate sample results. Columbia Analytical Services performed analyses on both the primary and duplicate samples.

4.5 IDW Disposal

All IDW generated during the December 2005 event were determined to be non-hazardous wastes and were taken to an offsite recycling facility on 8 February 2006 The Non-Hazardous Waste Manifest is presented in Appendix A of this report.

5. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are based on the data collected during this investigation.

Stilling Basin

- Concentrations of dissolved lead, naphthalene, 2-methylnaphthalene were detected above the laboratory MRLs. No constituents were detected at concentrations above the HDOH Tier 1 GWALs or HDOH drinking water standard.

Sentinel Well

- Concentrations of TPH as diesel, naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, phenanthrene, fluoranthene, pyrene, benz(a)anthracene, chrysene, Benzo(a)pyrene and Benzo(g,h,i)perylene were detected above laboratory MRLs. No constituents were detected at concentrations above the HDOH Tier 1 GWALs.
- Dissolved lead was detected at concentrations above the laboratory MRL. The concentrations were below both the HDOH Tier 1 GWAL and the HDOH drinking water standard in the sentinel well samples. The December 2005 results were also less than the corresponding 2001 investigation results (AMEC, 2002). In both this quarter and the third quarter 2005, samples collected at MW-V1D contained lead concentrations below the HDOH Tier 1 GWAL and HDOH drinking water standard. It should be noted that in the first and second quarter 2005, samples collected from MW-V1D were not filtered prior to lead analysis. However in the last two quarters (third and fourth quarter 2005) samples were filtered prior to lead analysis.
- The groundwater in the upgradient sentinel well (MW-V1D) shows evidence of contamination in the basal aquifer by contaminants of potential concern.

Based on the findings during this investigation, DAWSON recommends the following actions:

- Installation of a dedicated pump within MW-V1D to avoid cross-contamination, to facilitate low-flow sampling methodology, to more efficiently sample the monitoring well, and to contribute to the repeatability of sampling methods.
- Continue to filter lead samples during collection and prior to analysis.
- Continue sampling at the stilling basin and the sentinel well during the next quarter (January through March 2006).

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6. REFERENCES

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FIGURES

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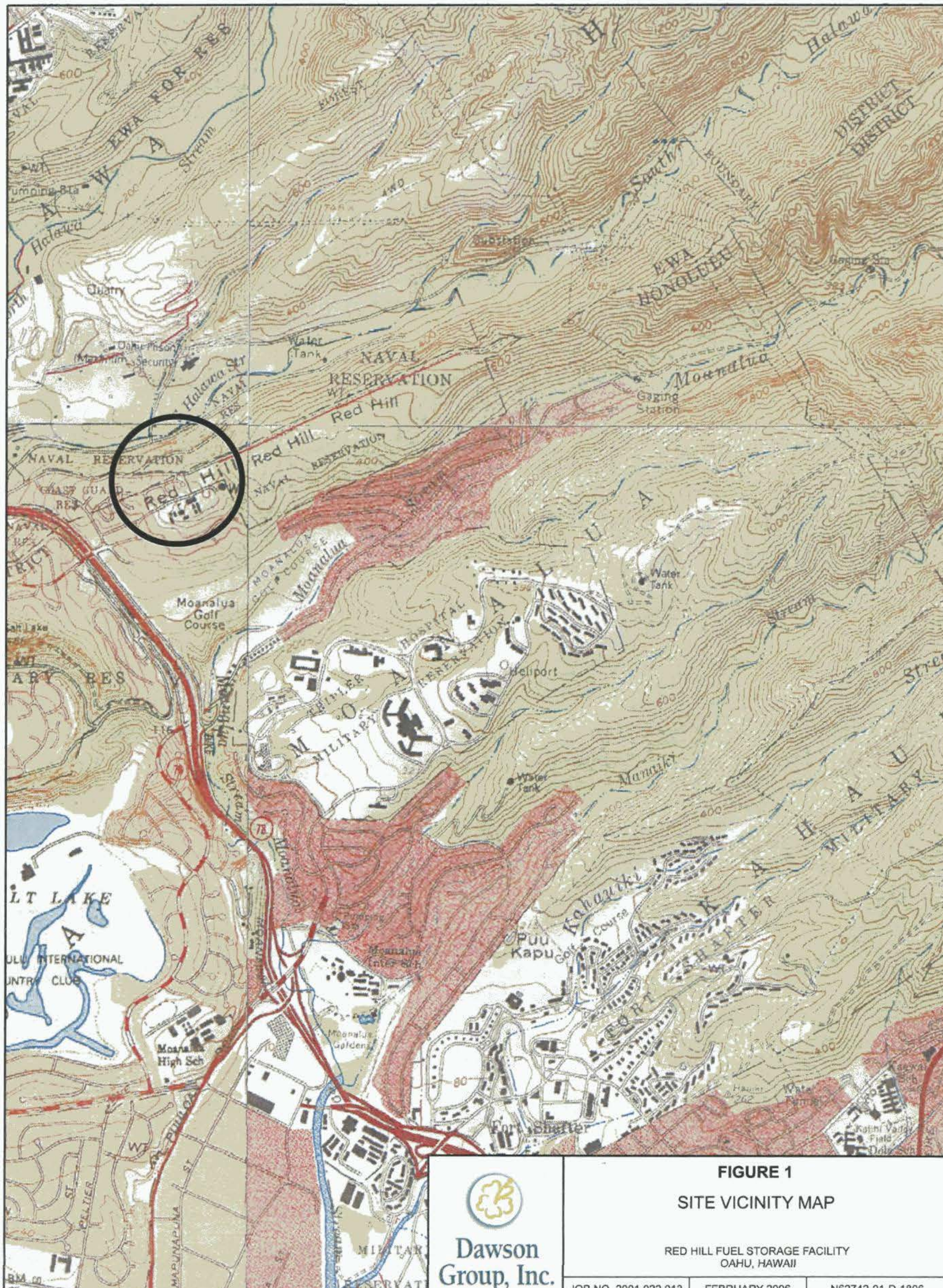

FIGURE 1

SITE VICINITY MAP

RED HILL FUEL STORAGE FACILITY
OAHU, HAWAII

Dawson Group, Inc.

JOB NO. 2001 022.013	FEBRUARY 2006	N62742-01-D-1806

QUARTERLY REPORT

LEGEND

EXISTING NAVY BOUNDARY

EXISTING NON-NAVY BOUNDARY

EXISTING ROAD OR PAVED AREA

QUEEN EMMA ESTATE

NORTH

SOUTH HALAWA STREAM

SOUTH HALAWA STREAM

RED HILL ADIT NO. 3 WATER PUMPING STATION

RED HILL OILY WASTE DISPOSAL FACILITY

ADIT NO. 3 ENTRANCE

H-3 FREEWAY

SOUTH HALAWA STREAM

STILLING BASIN

SENTINEL WELL MW-V1D

FISC UNDERGROUND STORAGE TANKS

BOUNDARY OF THE RED HILL NAVAL RESERVATION

SCALE: 1" = 600'

INFILTRATION TUNNEL

MOANALUA GOLF COURSE

MOANALUA

FREEWAY

KUKUI DRIVE

ALAMANU DRIVE

SOURCE: EARTHTECH FIGURE 3-5, U.S. NAVY FISC RED HILL WATER DEVELOPMENT TUNNEL, 11/98.

Dawson Group, Inc.

CONTRACT NO N62742-01-D-1806, CTO 0013

FIGURE 2

SITE PLAN

GROUNDWATER SAMPLING REPORT
RED HILL FUEL STORAGE FACILITY, HAWAII

JOB NO. 2001_022.013 | FEBRUARY 2008

TABLES

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TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				Pumps Offline	Pumps Offline		Relative Percent Difference (RPD)	Pumps Offline	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	SAMPLE IDENTIFICATION			RH-B-001	RH-B-004	RH-B-005		RH-B-007			
	SAMPLE TYPE			Primary	Primary	Duplicate		Primary			
	DATE COLLECTED			02/16/2005	08/28/2005	08/28/2005		09/08/2005			
	ANALYSIS	EPA METHOD	MRL								
Metals	Total Lead	6020	*0 000050*	0 00033	0 000952	0 000549	*54%*	0 00005 ④	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0 052*	ND	0 043 J	0 067 Z	*44%*	0 045 J	NE	0 100 ①	mg/L
	TPH as Residual Range	8015M	*0 100*	ND	NA	NA	NA	0 059 J	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0 050*	ND	<0 050	<0 050	NA	<0 050	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0 0000095*	ND	<0 0000095	<0 0000097	NA	<0 0000095	NE	0 00012 ②	mg/L
VOCs	Benzene	8260B	*0.00050*	ND	<0 00050	<0 00050	NA	<0 00050	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	ND	<0 00050	<0 00050	NA	<0 00050	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	0 001	<0 00050	<0 00050	NA	<0 00050	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0 00050*	ND	<0 00050	<0 00050	NA	<0 00050	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0 00050*	ND	<0 00050	<0 00050	NA	<0 00050	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0 00050*	ND	<0 00050	<0 00050	NA	<0 00050	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	ND	<0 00050	<0 00050	NA	<0 00050	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	0 000085	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 010 ①	mg/L
	Acenaphthylene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	<0 000020	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0.000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 00035 ①	mg/L

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			Pumps Offline	Pumps Offline		Relative Percent Difference (RPD)	Pumps Offline			
		SAMPLE IDENTIFICATION	RH-B-001	RH-B-004	RH-B-005		RH-B-007			
		SAMPLE TYPE	Primary	Primary	Duplicate		Primary			
		DATE COLLECTED	02/16/2005	06/28/2005	06/28/2005		09/08/2005			
	ANALYSIS	EPA METHOD	MRL					HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	Benzo(b)fluoranthene	8270C SIM	0 000020	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 000092 ①	mg/L
	Benzo(k)fluoranthene	8270C SIM	0 000020	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 00040 ①	mg/L
	Benzo(a)pyrene	8270C SIM	0 000020	ND	<0 000020	<0 000020	NA	<0 000020	0 0002	0 000014 ①	mg/L
	Indeno(1,2,3-cd)pyrene	8270C SIM	0 000020	ND	<0 000020	<0 000020	NA	<0 000020	NE	0 000092 ①	mg/L
	Dibenz(a,h)anthracene	8270C SIM	0 000020	ND	<0 000020	<0 000026 1	NA	<0 000020	NE	0 0000092 ①	mg/L
	Benzo(g,h,i)perylene	8270C SIM	0 000024	ND	<0 000024 1	<0 000020	NA	<0 000020	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
RH	Red Hill Fuel Station Facility
PAHs	polynuclear aromatic hydrocarbons
mg/L	milligrams per liter
MRL	method reporting limit
<	less than
J	the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL
Z	the chromatographic fingerprint does not resemble a petroleum product
1	the MRL/MDL has been elevated due to a chromatographic interference
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)
B	Stilling Basin
Bold	value is greater than regulatory action level
NE	none established
VOCs	volatile organic carbons
ND	not detected at or above laboratory MRL
NA	not analyzed

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005

② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards

③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000

④ *Lead samples were filtered in the field and analyzed for dissolved lead*

TAbLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				Pumps Online		Relative Percent Difference (RPD)	Pumps Online			
			SAMPLE IDENTIFICATION	RH-B-002	RH-B-003		RH-B-006			
			SAMPLE TYPE	Primary	Duplicate		Primary			
			DATE COLLECTED	02/16/2005	02/16/2005		06/28/2005			
	ANALYSIS	EPA METHOD	MRL					HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
Metals	Total Lead	6020	*0 000050*	0 00006	0 00005	*18%*	0 000129	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0 052*	ND [0 053]	ND	NA	0 058 Z	NE	*0 100* ①	mg/L
	TPH as Residual Range	8015M	*0.100*	ND [0 11]	ND	NA	NA	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0.050*	ND	ND	NA	<0 050	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0 0000095*	ND [0 0000081]	ND [0 0000082]	NA	<0 0000095	NE	0 00012 ②	mg/L
VOCs	Benzene	8260B	*0 00050*	ND	ND	NA	<0 00050	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	ND	ND	NA	<0 00050	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	0 0012	0 00081	*39%*	<0 00050	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0 00050*	ND	ND	NA	<0 00050	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0 00050*	ND	ND	NA	<0 00050	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0.00050*	ND	ND	NA	<0 00050	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	ND	ND	NA	<0 00050	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	*0 010* ①	mg/L
	Acenaphthylene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 00035 ①	mg/L

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			Pumps Online		Relative Percent Difference (RPD)	Pumps Online			
SAMPLE IDENTIFICATION			RH-B-002	RH-B-003		RH-B-006			
SAMPLE TYPE			Primary	Duplicate		Primary			
DATE COLLECTED			02/16/2005	02/16/2005		06/28/2005			
ANALYSIS	EPA METHOD	MRL					HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
Benzo(b)fluoranthene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 000092 ①	mg/L
Benzo(k)fluoranthene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 00040 ①	mg/L
Benzo(a)pyrene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	0 0002	0 000014 ①	mg/L
Indeno(1,2,3-cd)pyrene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 000092 ①	mg/L
Dibenz(a,h)anthracene	8270C SIM	*0 000020*	ND	ND	NA	<0 000021	NE	0 0000092 ①	mg/L
Benzo(g,h,i)perylene	8270C SIM	*0 000024*	ND	ND	NA	<0 000021	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
RH	Red Hill Fuel Station Facility
PAHs	polynuclear aromatic hydrocarbons
mg/L	milligrams per liter
MRL	method reporting limit
<	less than
J	*the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL*
Z	the chromatographic fingerprint does not resemble a petroleum product
i	the MRL/MDL has been elevated due to a chromatographic interference
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)
B	Stilling Basin
Bold	value is greater than regulatory action level
NE	none established
VOCs	volatile organic carbons
ND	not detected at or above laboratory MRL
NA	not analyzed

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005
② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards
③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000
④ Lead samples were filtered in the field

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				Pumps Online		Relative Percent Difference (RPD)	Pumps Offline		Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	SAMPLE IDENTIFICATION			RH-B-008	RH-B-009		RH-B-010	RH-B-011				
	SAMPLE TYPE			Primary	Duplicate		Primary	Duplicate				
	DATE COLLECTED			09/08/2005	09/08/2005		12/08/2005	12/08/2005				
	ANALYSIS	EPA METHOD	MRL									
Metals	Total Lead	6020	*0 000020*	0 00003 ④	0 00027 ④	*160%*	0 00014 ④	0 00004 ④	*111%*	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0 052*	<0 050	<0 050	NA	0 038 J	0 024 J	*45%*	NE	0 100 ①	mg/L
	TPH as Residual Range	8015M	*0 100*	<0 100	<0 100	NA	NA	NA	NA	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0 050*	<0 050	<0 050	NA	<0 50	<0 50	NA	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0.0000095*	<0 0000095	<0 0000095	NA	<0 0000096	<0 0000094	NA	NE	0 00012 ②	mg/L
VOCs	Benzene	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0.00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0.00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0 000020*	<0 000020	0 000045	NA	0 000036	0 000024	*40%*	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000038	0 000022	*53%*	NE	0 010 ①	mg/L
	Acenaphthylene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 0000023 J	0 0000024 J	*4%*	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0.000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 0000078 J	0 0000073 J	*7%*	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0.000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0.000020*	<0 000020	<0 000020	NA	0 0000084 J	0 0000092 J	*9%*	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0.000020*	<0 000020	<0 000020	NA	0 0000075 J	0 0000070 J	*7%*	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 0000022 J	0 0000033 J	*40%*	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 0000038 J	0 0000041 J	*8%*	NE	0 00035 ①	mg/L

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			Pumps Online			Pumps Offline					
	SAMPLE IDENTIFICATION		RH-B-008	RH-B-009	Relative Percent Difference (RPD)	RH-B-010	RH-B-011	Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	SAMPLE TYPE		Primary	Duplicate		Primary	Duplicate				
	DATE COLLECTED		09/08/2005	09/08/2005		12/08/2005	12/08/2005				
ANALYSIS	EPA METHOD	MRL									
Benzo(b)fluoranthene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 000092 ①	mg/L
Benzo(k)fluoranthene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 00040 ①	mg/L
Benzo(a)pyrene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	0 0002	0 000014 ①	mg/L
Indeno(1,2,3-cd)pyrene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 000092 ①	mg/L
Dibenz(a,h)anthracene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 0000092 ①	mg/L
Benzo(g,h,i)perylene	8270C SIM	*0 000024*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency	B	Stilling Basin
RH	Red Hill Fuel Station Facility	**Bold**	value is greater than regulatory action level
PAHs	polynuclear aromatic hydrocarbons	NE	none established
mg/L	milligrams per liter	VOCs	volatile organic carbons
MRL	method reporting limit	ND	not detected at or above laboratory MRL
<	less than	NA	not analyzed
J	the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL		
i	the MRL/MDL has been elevated due to a chromatographic interference		
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)		

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005
② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards
③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000
④ Lead samples were filtered in the field and analyzed for dissolved lead

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				Pumps Online			
			SAMPLE IDENTIFICATION	RH-B-012			
			SAMPLE TYPE	Primary			
			DATE COLLECTED	12/07/2005			
	ANALYSIS	EPA METHOD	MRL		HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
Metals	Total Lead	6020	*0 000020*	0 00002 ④	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0 052*	<0 052	NE	0 100 ①	mg/L
	TPH as Residual Range	8015M	*0 100*	NA	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0 050*	<0 050	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0 0000095*	<0 0000095	NE	0 00012 ②	mg/L
VOCs	Benzene	8260B	*0 00050*	<0 00050	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0.00050*	<0 00050	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	<0 00050	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0.00050*	<0 00050	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0 00050*	<0 00050	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0 00050*	<0 00050	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	<0 00050	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0.000020*	0 000011 J	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0 000020*	0 0000071 J	NE	0 010 ①	mg/L
	Acenaphthylene	8270C SIM	*0 000020*	<0 000020	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0.000020*	<0 000020	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0 000020*	<0 000020	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	<0 000020	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0.000020*	<0 000020	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0 000020*	<0 000020	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0 000020*	<0 000020	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0 000020*	<0 000020	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0 000020*	<0 000020	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	<0 000020	NE	0 00035 ①	mg/L

TABLE 1
Summary of Groundwater Sample Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				Pumps Online			
			SAMPLE IDENTIFICATION	RH-B-012			
			SAMPLE TYPE	Primary			
			DATE COLLECTED	12/07/2005			
	ANALYSIS	EPA METHOD	MRL	[redacted]	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	Benzo(b)fluoranthene	8270C SIM	*0 000020*	<0 000020	NE	0 000092 ①	mg/L
	Benzo(k)fluoranthene	8270C SIM	*0 000020*	<0 000020	NE	0 00040 ①	mg/L
	Benzo(a)pyrene	8270C SIM	*0 000020*	<0 000020	0 0002	0 000014 ①	mg/L
	Indeno(1,2,3-cd)pyrene	8270C SIM	*0 000020*	<0 000020	NE	0 000092 ①	mg/L
	Dibenz(a,h)anthracene	8270C SIM	*0 000020*	<0 000020	NE	0 0000092 ①	mg/L
	Benzo(g,h,i)perylene	8270C SIM	*0 000024*	<0 000020	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
RH	Red Hill Fuel Station Facility
PAHs	polynuclear aromatic hydrocarbons
mg/L	milligrams per liter
MRL	method reporting limit
<	less than
J	the result is an estimated concentration that is less than the MRL but greater than or equal to the MDL
Z	the chromatographic fingerprint does not resemble a petroleum product
I	the MRL/MDL has been elevated due to a chromatographic interference
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005

② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards

③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000

④ Lead samples were filtered in the field and analyzed for dissolved lead

TABLE 2
Summary of Groundwater Sample Results
MW-V1D
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				MW-1VD		Relative Percent Difference (RPD)	MW-1VD		Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	SAMPLE IDENTIFICATION			RH-W-001 ③	RH-W-002		RH-W-003	RH-W-004				
	SAMPLE TYPE			Primary	Duplicate		Primary	Duplicate				
	DATE COLLECTED			02/17/2005	02/17/2005		06/28/2005	06/28/2005				
	ANALYSIS	EPA METHOD	MRL									
Metals	Total Lead	6020	*0 000050*	**0.0102**	**0.0119**	*15%*	**0.006700**	**0.006980**	*4%*	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0 052*	1 4 Y	1 5	*7%*	1 300 Z	1 100 Z	*17%*	NE	0 100 ①	mg/L
	TPH as Residual Range	8015M	*0.100*	0 77 O	0 89	*14%*	ND	NA	NA	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0 05*	ND	ND	NA	<0 050	<0 050	NA	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0 0000095*	ND	ND [0 0000082]	NA	<0 0000095	<0 0000095	NA	NE	0 00012 ②	mg/L
BTEX	Benzene	8260B	*0.00050*	ND	ND	NA	<0 00050	<0 00050	NA	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	ND	ND	NA	<0 00050	<0 00050	NA	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0.000020*	0 00025	0 00021	*17%*	0 000073	0 000055	*28%*	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0 000020*	0 00014	0 000057	*84%*	0 000054	0 000051	*6%*	NE	0 010 ①	mg/L
	Acenaphthylene	8270C SIM	*0.000020*	ND	ND	NA	<0 000020	<0 000020	NA	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0 000020*	0 000052	0 000054	*4%*	0 000061	0 000061	*0%*	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0 000020*	0 00013	0 00011	*17%*	0 00012	0 00012	*0%*	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	0 000053	0 000043	*21%*	0 000041	0 000039	*5%*	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0 000020*	0 00012	0 000082	*38%*	0 00014	0 00010	*33%*	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0 000020*	ND	ND	NA	<0 000020	<0 000020	NA	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0 000020*	0 000035	0 000021	*50%*	0 000093	0 000064	*37%*	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0.000020*	0 000056	0 000029	*64%*	0 00011	0 000072	*42%*	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0 000020*	ND	ND	NA	0 000047	0 000033	*35%*	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	0 00002	ND	NA	0 000062	0 000044	*34%*	NE	0 00035 ①	mg/L

TABLE 2
Summary of Groundwater Sample Results
MW-V1D
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			MW-1VD			MW-1VD					
SAMPLE IDENTIFICATION			RH-W-001 ③	RH-W-002	Relative Percent Difference (RPD)	RH-W-003	RH-W-004	Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
SAMPLE TYPE			Primary	Duplicate		Primary	Duplicate				
DATE COLLECTED			02/17/2005	02/17/2005		06/28/2005	06/28/2005				
	ANALYSIS	EPA METHOD	MRL								
	Benzo(b)fluoranthene	8270C SIM	*0 000020*	0 000025	ND	NA	0 00004	0 000028	*35%*	NE	0 000092 ①	mg/L
	Benzo(k)fluoranthene	8270C SIM	*0 000020*	ND	ND	NA	0 000051	0 000035	*37%*	NE	0 00040 ①	mg/L
	Benzo(a)pyrene	8270C SIM	*0 000020*	0 000022	ND	NA	0 000045	0 000031	*37%*	0 0002	0 000014 ①	mg/L
	Indeno(1,2,3-cd)pyrene	8270C SIM	*0 000020*	ND	ND	NA	0 000037	0 000024	*43%*	NE	0 000092 ①	mg/L
	Dibenz(a,h)anthracene	8270C SIM	*0 000020*	ND	ND	NA	<0 000020	<0 000020	NA	NE	0 0000092 ①	mg/L
	Benzo(g,h,i)perylene	8270C SIM	*0.000020*	ND	ND	NA	0 000034	0 000022	*43%*	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
RH	Red Hill Fuel Station Facility
PAHs	polynuclear aromatic hydrocarbons
mg/L	milligrams per liter
MRL	method reporting limit
B	Stilling Basin at PWC Potable Water Facility
<	less than
Z	the chromatographic fingerprint does not resemble a petroleum product
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correc carbon range, but the elution pattern does not match the calibration standard
o	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL
Bold	value is greater than regulatory action level
NE	none established
VOCs	volatile organic carbons
ND	not detected at or above the laboratory MRL
NA	not analyzed

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005
② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards
③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000
④ Lead samples were filtered in the field and analyzed for dissolved lead

TABLE 2
Summary of Groundwater Sample Results
MW-V1D
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

				MW-1VD		Relative Percent Difference (RPD)	MW-1VD		Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
	SAMPLE IDENTIFICATION			RH-W-006	RH-W-006		RH-W-007	RH-W-008				
	SAMPLE TYPE			Primary	Duplicate		Primary	Duplicate				
	DATE COLLECTED			09/08/2005	09/08/2005		12/06/2005	12/06/2005				
	ANALYSIS	EPA METHOD	MRL									
Metals	Total Lead	6020	*0 000020*	0 00021 ④	0 000050 ④	*123%*	0 000060 ④	0 000040 ④	*40%*	0 0056	0 015 ①②	mg/L
Hydrocarbons	TPH as Diesel	8015M	*0.052*	0 950 Y	1 100 Y	*15%*	0 670 Z	0 740 Z	*10%*	NE	0 100 ①	mg/L
	TPH as Residual Range	8015M	*0 100*	0 540 O	0 720 O	*25%*	NA	NA	NA	NE	0 100 ①	mg/L
	TPH as Gasoline	8015M	*0 05*	<0 050	<0 050	NA	<0 050	<0 050	NA	NE	0 100 ①	mg/L
EDB	1,2-Dibromoethane (EDB)	504 1	*0.0000095*	<0 0000096	<0 0000094	NA	<0 0000096	<0 0000095	NA	NE	0 00012 ②	mg/L
BTEX	Benzene	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	1 70 ③	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 02 ③	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	0 00015 J	0 00015 J	*0%*	0 00012 J	<0 00050	NA	2 1 ③	0 040 ①	mg/L
	Ethylbenzene	8260B	*0.00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 14 ③	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0.00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	o-Xylene	8260B	*0.00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	10 0 ③	0 020 ①	mg/L
	1,2-Dichloroethane (1,2-DCA)	8260B	*0 00050*	<0 00050	<0 00050	NA	<0 00050	<0 00050	NA	0 005 ②	0 00012 ①	mg/L
PAHs	Naphthalene	8270C SIM	*0 000020*	0 00083	0 00078	*6%*	0 00051	0 00048	*6%*	0 24	0 0062 ①	mg/L
	2-Methylnaphthalene	8270C SIM	*0 000020*	0 000038	0 000038	*0%*	0 000098	0 00011	*12%*	NE	0 010 ①	mg/L
	Acenaphthylene	8270C SIM	*0.000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 240 ①	mg/L
	Acenaphthene	8270C SIM	*0 000020*	0 000054	0 000056	*4%*	0 000061	0 000058	*5%*	0 32	0 020 ①	mg/L
	Dibenzofuran	8270C SIM	*0 000020*	0 00013	0 00013	*0%*	0 00015	0 00015	*0%*	NE	NE	mg/L
	Fluorene	8270C SIM	*0 000020*	0 000064	0 000064	*0%*	0 000058	0 00005	*15%*	NE	0 240 ①	mg/L
	Phenanthrene	8270C SIM	*0.000020*	0 00011	0 00012	*9%*	0 00010	0 000059	*52%*	NE	0 0077 ①	mg/L
	Anthracene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000012 J	<0 000020	NA	NE	NE	mg/L
	Fluoranthene	8270C SIM	*0.000020*	0 000025	0 000049	*65%*	0 000062	0 000026	*82%*	0 01	0 040 ①	mg/L
	Pyrene	8270C SIM	*0 000020*	0 000030	0 000058	*64%*	0 000072	0 000026	*94%*	NE	0 002 ①	mg/L
	Benz(a)anthracene	8270C SIM	*0 000020*	<0 000020	0 000025	NA	0 000027	0 0000077 J	*111%*	NE	0 000027 ①	mg/L
	Chrysene	8270C SIM	*0 000020*	0 000022	0 000036	*48%*	0 000036	0 000014 J	*88%*	NE	0 00035 ①	mg/L

TABLE 2
Summary of Groundwater Sample Results
MW-V1D
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			MW-1VD		Relative Percent Difference (RPD)	MW-1VD		Relative Percent Difference (RPD)	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
SAMPLE IDENTIFICATION			RH-W-005	RH-W-006		RH-W-007	RH-W-008				
SAMPLE TYPE			Primary	Duplicate		Primary	Duplicate				
DATE COLLECTED			09/08/2005	09/08/2005		12/06/2005	12/06/2005				
ANALYSIS	EPA METHOD	MRL									
Benzo(b)fluoranthene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000020 J	0 0000072 J	*94%*	NE	0 000092 ①	mg/L
Benzo(k)fluoranthene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000017 J	0 0000068 J	*86%*	NE	0 00040 ①	mg/L
Benzo(a)pyrene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000024	0 0000086 J	*94%*	0 0002	0 000014 ①	mg/L
Indeno(1,2,3-cd)pyrene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000017 J	0 0000075 J	*78%*	NE	0 000092 ①	mg/L
Dibenz(a,h)anthracene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	<0 000020	<0 000020	NA	NE	0 0000092 ①	mg/L
Benzo(g,h,i)perylene	8270C SIM	*0 000020*	<0 000020	<0 000020	NA	0 000015 J	0 0000057 J	*90%*	NE	0 0001 ①	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
RH	Red Hill Fuel Station Facility
PAHs	polynuclear aromatic hydrocarbons
mg/L	milligrams per liter
MRL	method reporting limit
B	Stilling Basin at PWC Potable Water Facility
<	less than
Z	the chromatographic fingerprint does not resemble a petroleum product
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correc carbon range, but the elution pattern does not match the calibration standarc
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard
RPD	relative percent difference between primary and duplicate sample results RPD = Absolute value (primary - duplicate) / average (primary duplicate)
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005

② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards

③ State of Hawaii Department of Health, 2000 Hawaii Underground Storage Tank (UST) Technical Guidance Manual March 2000

④ Lead samples were filtered in the field and analyzed for dissolved lead

TABLE 3
Summary of Trip Blank Results
Stilling Basin
Red Hill Fuel Storage Facility
Red Hill, Oahu, Hawaii

			SAMPLE IDENTIFICATION	Trip Blank *	Trip Blank *	Trip Blank	Trip Blank	HDOH Tier 1 Groundwater Action Levels	Environmental Action Levels	UNITS
			SAMPLE TYPE	Trip Blank	Trip Blank	Trip Blank	Trip Blank			
			DATE COLLECTED	02/17/2005	06/28/2005	09/08/2005	12/06/2005			
	ANALYSIS	EPA METHOD	MRL							
Hydrocarbons	TPH as Gasoline	8015M	*0 05*	NA	<0 050	NA	NA	NE	0 100 ①	mg/L
BTEX	Benzene	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	1 70 ①	0 0050 ①	mg/L
	Methyl tert-Butyl Ether	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	0 02 ①	0 0050 ①	mg/L
	Toluene	8260B	*0 00050*	0 0014	0 00054	<0 00050	0 00022 J	2 1 ①	0 040 ①	mg/L
	Ethylbenzene	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	0 14 ①	0 030 ①	mg/L
	m,p-Xylenes	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	10 0 ①	0 020 ①	mg/L
	o-Xylene	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	10 0 ①	0 020 ①	mg/L
	1,2-Dichloroethane (DCA)	8260B	*0 00050*	ND	<0 00050	<0 00050	<0 00050	0 005 ②	0 005 ②	mg/L

Acronyms and Abbreviations

EPA	United States Environmental Protection Agency	ND	not detected at or above the laboratory MRL
PAHs	polynuclear aromatic hydrocarbons	NA	not analyzed
mg/L	milligrams per liter		
MRL	method reporting limit		
<	less than		
Bold	value is greater than regulatory action level		
NE	none established		
VOCs	volatile organic compounds		

Notes

① State of Hawaii Department of Health, 2005 Screening for Environmental Concerns At Sites with Contaminated Soil and Groundwater Volume 1, May 2005

② State of Hawaii, Department of Health, 2002 Hawaii Administrative Rules Chapter 11, Title 20 Potable Water Drinking Water Standards

APPENDIX A

Non-Hazardous Waste Manifest

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NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	
H I R 0 0 0 0 5 0 4 0 1	06R02		HIC1839-01

3. Generator's Name and Mailing Address: COMNAVREG HAWAII, CODE N45, REGIONAL ENV. DEPT.
850 TICONDEROGA STREET, SUITE 110, ATTN: AMANDA MANOI
PEARL HARBOR, HI 96860-5102
4. Generator's Phone ( ) 808-473-4137X233

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
PACIFIC COMMERCIAL SERVICES, LLC.	H I R 0 0 0 0 9 7 8 2 4	808-545-4599
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
UNITEK SOLVENT SERVICES, INC.-OAHU	H I D 9 8 2 4 4 3 7 1 5	808-682-8284
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
UNITEK SOLVENT SERVICES, INC. 91-125 KAOMI LOOP KAPOLEI, HI 96707	H I D 9 8 2 4 4 3 7 1 5	808-682-8284

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. MATERIAL NOT REGULATED BY DOT (WELL MONITORING WATER)	001	DM	00005	G
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above
11A NR HALOGEN:<1000 PPM 1X3 PH=7.01
11B *
11C * Hydrochlor X1=<4000ppm
11D *

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
24 HR EMERGENCY RESPONSE # : ERG#
1-800-645-8265

GENERATOR'S CERTIFICATION: I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME (WHERE APPLICABLE) AND ARE CLASSIFIED, PACKED, MARKED , AND LABELED AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT BY HIGHWAY ACCORDING TO APPLICABLE GOVERNMENT REGULATIONS. I FURTHER CERTIFY THAT IF THIS IS USED OIL IT IS SUBJECT TO REGULATION UNDER 40 CFR PART 279; THAT IT DOES NOT CONTAIN PCBS GREATER THAN OR EQUAL TO 2 PPM; AND THAT IT HAS NOT BEEN CONTAMINATED WITH CARBURATOR CLEANERS, BRAKE SPRAY, FREON, HALOGENATED SOLVENTS, OR OTHER HAZARDOUS MATERIALS AND/OR HAZARDOUS WASTES.

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Amanda L. Manoi	Amanda Manoi	10	08	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JINGBO CHANG		10	08	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Caroline K. Akau		10	12	06

19. Discrepancy Indication Space
See consolidated manifest NW0385

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Laura Chang		10	12	06

GENERATOR — TRANSPORTER — FACILITY

ORIGINAL - RETURN TO GENERATOR

APPENDIX B

Laboratory Reports and Chain-of-Custody Records for Primary and QC Groundwater and Stilling Basin Samples

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1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

January 3, 2006 Service Request No: K0506494

Heather Kerr
Dawson Group, Incorporated
3375 Koapaka Street, Suite B200
Honolulu, HI 96819

RE: Red Hill GW Sampling/2001022.013

Dear Heather:

Enclosed are the results of the sample(s) submitted to our laboratory on December 9, 2005. For your reference, these analyses have been assigned our service request number K0506494.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
	The control limit criteria is not applicable See case narrative
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Dawson Group, Incorporated	**Service Request No.:**	K0506494
Project:	Red Hill GW Sampling	**Date Received:**	12/9/05
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

Six water samples were received for analysis at Columbia Analytical Services on 12/9/05. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Dissolved Metals

No anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by EPA Method 8015B

Relative Percent Difference (RPD) Exceptions:
The RPD criterion for the replicate analysis of DRO in Batch QC sample K0506473-001 is not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Gasoline Range Organics by EPA Method 8015B

No anomalies associated with the analysis of these samples were observed.

EPA Method 504.1

No anomalies associated with the analysis of these samples were observed.

Volatile Organic Compounds by EPA Method 8260B

No anomalies associated with the analysis of these samples were observed.

Approved by Elissa Erickson Date 1-4-06

Semivolatile Organic Compounds by EPA Method 8270C

Surrogate Exceptions:
The upper control criterion was exceeded for the surrogates Fluorene-d10 and Fluoranthene-d10 in Method Blank KWG0521180-3. No target analytes were detected above the MRL in the Method Blank. Since the apparent problem equates to a high bias, the data quality is not significantly affected. No further corrective action was appropriate.

The control criteria were exceeded for the surrogates Fluorene-d10 and Fluoranthene-d10 in LCS KWG0521180-3 and DLCS KWG0521180-4. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier is flagged accordingly. No further corrective action was appropriate.

Sample Notes and Discussion
Insufficient sample volume was received to perform a Matrix Spike Duplicate (MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Elissa Erickson Date 1-4-06

Chain of Custody Documentation

CHAIN OF CUSTODY

Columbia Analytical Services INC
An Employee - Owned Company

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: K0506 PAGE 1 OF 1 COC #

PROJECT NAME: RI-D HILL GW SAMPLING
PROJECT NUMBER: 2001022.013
PROJECT MANAGER: HEATHER KERR
COMPANY/ADDRESS: DAWSON GROUP, INC
3375 KOAPAKA ST B200
CITY/STATE/ZIP: HON, HI 96819
E MAIL ADDRESS: hkerr@dawson8a.com
PHONE #: (808) 536-5500 x341 FAX #: (808) 536 5530
SAMPLER'S SIGNATURE: Heather Kerr

SAMPLE I.D	DATE	TIME	LAB I.D	MATRIX	NUMBER OF CONTAINERS	REMARKS
Temp Blank	2/6/05	—		H2O	1	Lead samples
Trip Blank	2/6/05	—		H2O	2	was filtered
RH-W-007	2/6/05	0943		H2O	14+3	in the field
RH-W-008	2/6/05	0943		H2O	14+3	*dawson
RH-B-010	2/6/05	1345		H2O	13+1R	labels are
RH-B-011	2/6/05	1345		H2O	13	incorrect -
RH-B-012	2/7/05	0851		H2O	13	should be
						12/6/05, not
						12/5/05
					NO	FURTHER ENTRIES. 12/7/05

Analyses requested: Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐; Volatile Organics 624 ☐ 8260 ☒; Hydrocarbons (* see below) Gas ☒ Diesel ☒ Oil ☐; Fuel Fingerprint (FIO) ☐; NW-HCID Screen ☐; Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐; PCB's Aroclors ☐ Congeners ☐; Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐; Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐; PAHS 8310 ☐ SIM ☒; Metals: Total ☐ Dissolved ☐ (See list below); Cyanide ☐; pH, Cond., Cl, SO4, PO4, F, NO3, NO2, BOD, TSS, TDS (circle); NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3; TOX 9020 ☐ AOX 1650 ☐ 506 ☐; EDB 504.1; BTEX ☐; MTBE, 1-2, DCA 8021 ☐; 6020

REPORT REQUIREMENTS

___ I Routine Report. Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
X III *Data Validation Report* (Includes all raw data)
___ IV CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # 2001022.013.002
Bill To: DAWSON GROUP
3375 KOAPAKA B200
HON, HI 96819

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results
___ Requested Report Date

Circle which metals are to be analyzed:

Total Metals Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals Al As Sb Ba Be B Ca Cd Co Cr Cu Fe (Pb) Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST (OTHER: TX) (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
1. please email hkerr@dawson8a.com upon sample receipt.
2. please email preliminary results (PDF) to hkerr@dawson8a.com
3. follow w/ hardcopy of final results.
4. please call with any questions.

H250282

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Heather Kerr	Signature: Tracie Sober	Signature: Tracie Sober	Signature:
Date/Time: 12/7/05 1650	Date/Time: 12/7/05 1650	Date/Time: 12/8/05 1015	Date/Time:
Printed Name: HEATHER KERR	Printed Name: Tracie Sober	Printed Name: Tracie Sober	Printed Name:
Firm: DAWSON	Firm: YND CAS	Firm: YND CAS	Firm:

RCOC #1 06/03

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

PC HARU

Project/Client Dawson Service Request K05 6494

Cooler received on 12/8/05 and opened on 12/8/05 by A. Juell

1.	Were custody seals on outside of coolers?	(Y)	N
	If yes, how many and where? 1F		
2.	Were custody seals intact?	(Y)	N
3.	Were signature and date present on the custody seals?	(Y)	N
4.	Is the shipper's airbill available and filed? If no, record airbill number: 851285208590	Y	N
5.	COC#		
	Temperature of cooler(s) upon receipt: (°C)	4.5 / 6.6	
	Temperature Blank: (°C)	2.6 / 5.6	
	Were samples hand delivered on the same day as collection?	~~Y~~	~~N~~
6.	Were custody papers properly filled out (ink, signed, etc.)?	(Y)	N
7.	Type of packing material present bubble, sleeves, ice		
8.	**Did all bottles arrive in good condition (unbroken)?**	(Y)	N
9.	Were all bottle labels complete (i.e analysis, preservation, etc.)?	(Y)	N
10.	Did all bottle labels and tags agree with custody papers?	(Y)	N
11.	**Were the correct types of bottles used for the tests indicated?**	(Y)	N
12.	Were all of the preserved bottles received at the lab with the appropriate pH?	(Y)	N
13.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	(Y)	N
14.	Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below?	~~Y~~	~~N~~
15.	Did the bottles originate from CAS/K or a branch laboratory?	(Y)	N
16.	**Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?**	~~Y~~	~~N~~
17.	Was C12/Res negative?	(Y)	N

Explain any discrepancies: _____

RESOLUTION: _____

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

00069

Dissolved Metals

DISSOLVED METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: Dawson Group, Incorporated

Service Request: K0506494

Project No.: 2001022.013

Project Name: Red Hill GW Sampling

Sample No.	Lab Sample ID.
RH-W-007 DISS	K0506494-002 DISS
RH-W-007D DISS	K0506494-002D DISS
RH-W-007S DISS	K0506494-002S DISS
RH-W-008 DISS	K0506494-003 DISS
RH-B-010 DISS	K0506494-004 DISS
RH-B-011 DISS	K0506494-005 DISS
RH-B-012 DISS	K0506494-006 DISS
Method Blank	K0506494-MB

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

Signature: 

Date: 12/30/05

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Date Collected:	12/06/05
Project Name:	Red Hill GW Sampling	Date Received:	12/09/05
Matrix:	WATER	Units:	µG/L
		Basis:	NA

Sample Name: RH-W-007 DISS Lab Code: K0506494-002 DISS

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.06		

% Solids: 0.0

Comments:

00012

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Date Collected:	12/06/05
Project Name:	Red Hill GW Sampling	Date Received:	12/09/05
Matrix:	WATER	Units:	µG/L
		Basis:	NA

Sample Name: RH-W-008 DISS Lab Code: K0506494-003 DISS

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.04		

olids: 0.0

Comments:

00013

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Date Collected:	12/06/05
Project Name:	Red Hill GW Sampling	Date Received:	12/09/05
Matrix:	WATER	Units:	µG/L
		Basis:	NA

Sample Name: RH-B-010 DISS Lab Code: K0506494-004 DISS

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.14		

% Solids: 0.0

Comments:

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Date Collected:	12/06/05
Project Name:	Red Hill GW Sampling	Date Received:	12/09/05
Matrix:	WATER	Units:	µG/L
		Basis:	NA

Sample Name: RH-B-011 DISS Lab Code: K0506494-005 DISS

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.04		

% Solids: 0.0

Comments:

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Date Collected:	12/07/05
Project Name:	Red Hill GW Sampling	Date Received:	12/09/05
Matrix:	WATER	Units:	µG/L
		Basis:	NA

Sample Name: RH-B-012 DISS Lab Code: K0506494-006 DISS

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.02	B	

% Solids: 0.0

Comments:

DISSOLVED METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: Dawson Group, Incorporated
Project No.: 2001022.013
Project Name: Red Hill GW Sampling
Matrix: WATER

Service Request: K0506494
Date Collected:
Date Received:
Units: µG/L
Basis: NA

Sample Name: Method Blank
Lab Code: K0506494-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Lead	6020	0.02	0.01	1	12/23/05	12/27/05	0.01	U	

% Solids: 0.0

Comments:

DISSOLVED METALS
- 5a -
SPIKE SAMPLE RECOVERY

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Units:	µg/L
Project Name:	Red Hill GW Sampling	Basis:	NA
Matrix:	WATER	% Solids:	0.0

Sample Name: RH-W-007S DISS Lab Code: K0506494-002S DISS

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Lead	59 - 127	19.1		0.06		20.0	95		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

DISSOLVED METALS
-6-
DUPLICATES

Client:	Dawson Group, Incorporated	Service Request:	K0506494
Project No.:	2001022.013	Units:	pg/L
Project Name:	Red Hill GW Sampling	Basis:	NA
Matrix:	WATER	% Solids:	0.0

Sample Name:RH-W-007D DISS Lab Code: K0506494-002D DISS

Analyte	Control Limit(%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Lead		0.06		0.05		16		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

DISSOLVED METALS
-7-
LABORATORY CONTROL SAMPLE

Client: Dawson Group, Incorporated Service Request: K0506494

Project No.: 2001022.013

Project Name: Red Hill GW Sampling

Aqueous LCS Source: Inorganic Ventures Solid LCS Source:

	Aqueous ug/L			Solid (mg/kg)				
Analyte	True	Found	%R	True	Found	C	Limits	%R
Lead	20.0	19.6	98					

EPA Method 504.1

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

EPA Method 504.1

Sample Name:	RH-W-007	**Units:**	ug/L
Lab Code:	K0506494-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0096	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

00022

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
ple Matrix:	Water	**Date Received:**	12/09/2005

EPA Method 504.1

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0095	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

00023

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

EPA Method 504.1

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0096	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
ple Matrix:	Water	**Date Received:**	12/09/2005

EPA Method 504.1

Sample Name:	RH-B-011	**Units:**	ug/L
Lab Code:	K0506494-005	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.0094	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/07/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

EPA Method 504.1

Sample Name:	RH-B-012	**Units:**	ug/L
Lab Code:	K0506494-006	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0 0095	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

00026

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	NA
ple Matrix:	Water	**Date Received:**	NA

EPA Method 504.1

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0521288-3	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504 1		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,2-Dibromoethane (EDB)	ND	U	0.011	1	12/12/05	12/12/05	KWG0521288	

Surrogate Name	%Rec	Control Limits	Note

Comments:

00027

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/12/2005
Sample Matrix:	Drinking water	**Date Analyzed:**	12/12/2005

Matrix Spike Summary
EPA Method 504.1

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K0506334-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	504.1	**Extraction Lot:**	KWG0521288

		Batch QCMS KWG0521288-1 Matrix Spike			
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,2-Dibromoethane (EDB)	ND	0.0772	0.0687	112	65-135

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00028

Client: Dawson Group, Incorporated
Project: Red Hill GW Sampling/2001022.013
ple Matrix: Water

Service Request: K0506494
Date Extracted: 12/12/2005
Date Analyzed: 12/12/2005

Lab Control Spike Summary
EPA Method 504.1

Extraction Method: METHOD
Analysis Method: 504.1

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0521288

	Lab Control Sample KWG0521288-2 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,2-Dibromoethane (EDB)	0.0743	0.0714	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

' recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00029

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/12/2005
Sample Matrix:	Water	**Date Analyzed:**	12/12/2005

Lab Control Spike Summary
EPA Method 504.1

Extraction Method:	METHOD	**Units:**	ug/L
Analysis Method:	504.1	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0521288

	Lab Control Sample KWG0521288-4 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
1,2-Dibromoethane (EDB)	0.0743	0.0714	104	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00030

Diesel Range Organics

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Diesel Range Organics

Sample Name:	RH-W-007	**Units:**	ug/L
Lab Code:	K0506494-002	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	670	Z	50	19	1	12/13/05	12/14/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	52-128	12/14/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Diesel Range Organics

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	740	Z	52	20	1	12/13/05	12/14/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	52-128	12/14/05	Acceptable

Comments:

00033

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Diesel Range Organics

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**38**	J	53	20	1	12/13/05	12/14/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	52-128	12/14/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Diesel Range Organics

Sample Name:	RH-B-011	**Units:**	ug/L
Lab Code:	K0506494-005	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	24	J	52	20	1	12/13/05	12/14/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	52-128	12/14/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/07/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Diesel Range Organics

Sample Name:	RH-B-012	**Units:**	ug/L
Lab Code:	K0506494-006	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	52	20	1	12/13/05	12/14/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	91	52-128	12/14/05	Acceptable

Comments:

00036

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Diesel Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0521262-4	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	50	19	1	12/13/05	12/13/05	KWG0521262	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	93	52-128	12/13/05	Acceptable

Comments:

00037

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Dawson Group, Incorporated
Project: Red Hill GW Sampling/2001022.013
Sample Matrix: Water

Service Request: K0506494

Surrogate Recovery Summary
Diesel Range Organics

Extraction Method: EPA 3510B
Analysis Method: 8015M

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RH-W-007	K0506494-002	87
RH-W-008	K0506494-003	93
RH-B-010	K0506494-004	87
RH-B-011	K0506494-005	85
RH-B-012	K0506494-006	91
Batch QCDUP	KWG0521262-5	92
Method Blank	KWG0521262-4	93
Batch QC	K0506473-001	103
Lab Control Sample	KWG0521262-2	92
Duplicate Lab Control Sample	KWG0521262-3	97

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	52-128

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/13/2005
Matrix:	Water	**Date Analyzed:**	12/13/2005

Duplicate Sample Summary
Diesel Range Organics

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K0506473-001	**Basis:**	NA
Extraction Method:	EPA 3510B	**Level:**	Low
Analysis Method:	8015M	**Extraction Lot:**	KWG0521262

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG0521262-5 Duplicate Sample Result	Average	Relative Percent Difference	RPD Limit
Diesel Range Organics (DRO)	48	19	52	63	57	19 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00039

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/13/2005
Sample Matrix:	Water	**Date Analyzed:**	12/13/2005

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel Range Organics

Extraction Method:	EPA 3510B	**Units:**	ug/L
Analysis Method:	8015M	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0521262

	Lab Control Sample KWG0521262-2 Lab Control Spike			Duplicate Lab Control Sample KWG0521262-3 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Diesel Range Organics (DRO)	1510	1600	94	1660	1600	104	67-151	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00040

Gasoline Range Organics

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Gasoline Range Organics

Sample Name:	RH-W-007	**Units:**	ug/L
Lab Code:	K0506494-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	83	75-120	12/20/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Gasoline Range Organics

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	83	75-120	12/20/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Gasoline Range Organics

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	91	75-120	12/20/05	Acceptable

Comments:

00044

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Gasoline Range Organics

Sample Name:	RH-B-011	**Units:**	ug/L
Lab Code:	K0506494-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	90	75-120	12/20/05	Acceptable

Comments:

00045

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/07/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Gasoline Range Organics

Sample Name:	RH-B-012	**Units:**	ug/L
Lab Code:	K0506494-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	78	75-120	12/20/05	Acceptable

Comments:

00046

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0521741-4	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics (GRO)	ND	U	50	13	1	12/20/05	12/20/05	KWG0521741	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	84	75-120	12/20/05	Acceptable

Comments:

00047

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Dawson Group, Incorporated
Project: Red Hill GW Sampling/2001022.013
Sample Matrix: Water

Service Request: K0506494

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030B
Analysis Method: 8015B

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RH-W-007	K0506494-002	83
RH-W-008	K0506494-003	83
RH-B-010	K0506494-004	91
RH-B-011	K0506494-005	90
RH-B-012	K0506494-006	78
Method Blank	KWG0521741-4	84
RH-B-010MS	KWG0521741-1	84
RH-B-010DMS	KWG0521741-2	84
Lab Control Sample	KWG0521741-3	86

Surrogate Recovery Control Limits (%)

Sur1 = 1,4-Difluorobenzene	75-120

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

00046

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/20/2005
Sample Matrix:	Water	**Date Analyzed:**	12/20/2005

Matrix Spike/Duplicate Matrix Spike Summary
Gasoline Range Organics

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8015B	**Extraction Lot:**	KWG0521741

		RH-B-010MS KWG0521741-1 Matrix Spike			RH-B-010DMS KWG0521741-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Gasoline Range Organics (GRO)	ND	433	500	87	443	500	89	69-128	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00049

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/20/2005
Sample Matrix:	Water	**Date Analyzed:**	12/20/2005

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8015B	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0521741

	Lab Control Sample KWG0521741-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Gasoline Range Organics (GRO)	439	500	88	71-128

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00056

Volatile Organic Compounds
EPA Method 8260B

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K0506494-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	**0.22**	J	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	80-119	12/13/05	Acceptable
Toluene-d8	96	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	90	72-114	12/13/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	RH-W-007	**Units:**	ug/L
Lab Code:	K0506494-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	**0.12**	J	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
[illegible]uofluoromethane	103	80-119	12/13/05	Acceptable
To[illegible]ne-d8	96	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	91	72-114	12/13/05	Acceptable

Comments:

00053

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	80-119	12/13/05	Acceptable
Toluene-d8	95	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	92	72-114	12/13/05	Acceptable

Comments:

00054

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
P[illegible]ct:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
[illegible]le Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
[illegible]ofluoromethane	99	80-119	12/13/05	Acceptable
To[illegible]ne-d8	95	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	90	72-114	12/13/05	Acceptable

Comments:

00055

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	RH-B-011	**Units:**	ug/L
Lab Code:	K0506494-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	80-119	12/13/05	Acceptable
Toluene-d8	95	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	88	72-114	12/13/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
P ct:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/07/2005
le Matrix:	Water	**Date Received:**	12/09/2005

Volatile Organic Compounds

Sample Name:	RH-B-012	**Units:**	ug/L
Lab Code:	K0506494-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
I nofluoromethane	99	80-119	12/13/05	Acceptable
To uene-d8	97	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	88	72-114	12/13/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0521283-2	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.14	1	12/13/05	12/13/05	KWG0521283	
Methyl tert-Butyl Ether	ND	U	0.50	0.20	1	12/13/05	12/13/05	KWG0521283	
Toluene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
Ethylbenzene	ND	U	0.50	0.13	1	12/13/05	12/13/05	KWG0521283	
m,p-Xylenes	ND	U	0.50	0.22	1	12/13/05	12/13/05	KWG0521283	
o-Xylene	ND	U	0.50	0.11	1	12/13/05	12/13/05	KWG0521283	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.12	1	12/13/05	12/13/05	KWG0521283	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	94	80-119	12/13/05	Acceptable
Toluene-d8	96	83-113	12/13/05	Acceptable
4-Bromofluorobenzene	93	72-114	12/13/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Dawson Group, Incorporated
Project: Red Hill GW Sampling/2001022.013
Sample Matrix: Water

Service Request: K0506494

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260B

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Trip Blank	K0506494-001	94	96	90
RH-W-007	K0506494-002	103	96	91
RH-W-008	K0506494-003	98	95	92
RH-B-010	K0506494-004	99	95	90
RH-B-011	K0506494-005	98	95	88
RH-B-012	K0506494-006	99	97	88
Method Blank	KWG0521283-2	94	96	93
Batch QC	K0506386-001	98	96	88
Batch QCMS	KWG0521283-3	96	102	100
Batch QCDMS	KWG0521283-4	97	100	101
Lab Control Sample	KWG0521283-1	97	102	102

Surrogate Recovery Control Limits (%)

Sur1 = Dibromofluoromethane	80-119
Sur2 = Toluene-d8	83-113
Sur3 = 4-Bromofluorobenzene	72-114

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/13/2005
Sample Matrix:	Water	**Date Analyzed:**	12/13/2005

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K0506386-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B	**Extraction Lot:**	KWG0521283

Analyte Name	Sample Result	Batch QCMS KWG0521283-3 Matrix Spike			Batch QCDMS KWG0521283-4 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Benzene	0.21	10.2	10.0	100	9.75	10.0	95	75-130	4	30
Methyl tert-Butyl Ether	ND	8.98	10.0	90	10.0	10.0	100	50-152	11	30
Toluene	ND	10.1	10.0	101	9.34	10.0	93	72-132	8	30
Ethylbenzene	0.15	10.6	10.0	105	10.4	10.0	102	83-130	3	30
m,p-Xylenes	0.44	21.2	20.0	104	20.6	20.0	101	84-132	3	30
o-Xylene	0.13	10.2	10.0	101	10.0	10.0	99	83-128	2	30
1,2-Dichloroethane (EDC)	ND	8.93	10.0	89	9.07	10.0	91	74-122	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00060

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/13/2005
Sample Matrix:	Water	**Date Analyzed:**	12/13/2005

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260B	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0521283

	Lab Control Sample KWG0521283-1 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Benzene	8.81	10.0	88	78-121
Methyl tert-Butyl Ether	9.18	10.0	92	63-132
Toluene	8.84	10.0	88	76-122
Ethylbenzene	9.54	10.0	95	84-122
m,p-Xylenes	18.6	20.0	93	83-125
o-Xylene	9.26	10.0	93	83-122
1,2-Dichloroethane (EDC)	9.09	10.0	91	74-121

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00061

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-W-007	**Units:**	ug/L
Lab Code:	K0506494-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.51**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.098**		0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	ND	U	0.020	0.0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	**0.061**		0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	**0.15**		0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	**0.058**		0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	**0.10**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	**0.012**	J	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	**0.062**		0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	**0.072**		0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	**0.027**		0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	**0.036**		0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
P (b)fluoranthene	**0.020**	J	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
l (k)fluoranthene	**0.017**	J	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	**0.024**		0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	**0.017**	J	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	**0.015**	J	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	97	24-111	12/23/05	Acceptable
Fluoranthene-d10	87	26-123	12/23/05	Acceptable
Terphenyl-d14	71	25-146	12/23/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.48**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.11**		0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	ND	U	0.020	0.0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	**0.058**		0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	**0.15**		0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	**0.050**		0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	**0.059**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	ND	U	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	**0.026**		0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	**0.026**		0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	**0.0077**	J	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	**0.014**	J	0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
Benzo(b)fluoranthene	**0.0072**	J	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Benzo(k)fluoranthene	**0.0068**	J	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	**0.0086**	J	0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	**0.0075**	J	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	**0.0057**	J	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	99	24-111	12/23/05	Acceptable
Fluoranthene-d10	95	26-123	12/23/05	Acceptable
Terphenyl-d14	84	25-146	12/23/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-B-010	**Units:**	ug/L
Lab Code:	K0506494-004	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.036**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.038**		0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	**0.0023**	J	0.020	0.0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	ND	U	0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	ND	U	0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	**0.0078**	J	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	ND	U	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	**0.0084**	J	0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	**0.0075**	J	0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	**0.0022**	J	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	**0.0038**	J	0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
B[illegible](b)fluoranthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
B[illegible]k)fluoranthene	ND	U	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	ND	U	0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	ND	U	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	97	24-111	12/23/05	Acceptable
Fluoranthene-d10	90	26-123	12/23/05	Acceptable
Terphenyl-d14	75	25-146	12/23/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/06/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-B-011	**Units:**	ug/L
Lab Code:	K0506494-005	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.024**		0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.022**		0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	**0.0024**	J	0.020	0.0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	ND	U	0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	ND	U	0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	**0.0073**	J	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	ND	U	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	**0.0092**	J	0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	**0.0070**	J	0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	**0.0033**	J	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	**0.0041**	J	0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Benzo(k)fluoranthene	ND	U	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	ND	U	0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	ND	U	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	94	24-111	12/23/05	Acceptable
Fluoranthene-d10	97	26-123	12/23/05	Acceptable
Terphenyl-d14	98	25-146	12/23/05	Acceptable

Comments:

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	12/07/2005
Sample Matrix:	Water	**Date Received:**	12/09/2005

Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-B-012	**Units:**	ug/L
Lab Code:	K0506494-006	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.011**	**J**	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.0071**	**J**	0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	ND	U	0.020	0.0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	ND	U	0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	ND	U	0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	ND	U	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	ND	U	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	ND	U	0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	ND	U	0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	ND	U	0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
P [illegible](b)fluoranthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
l (k)fluoranthene	ND	U	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	ND	U	0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	ND	U	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	94	24-111	12/23/05	Acceptable
Fluoranthene-d10	101	26-123	12/23/05	Acceptable
Terphenyl-d14	105	25-146	12/23/05	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0521180-3	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0070**	J	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
2-Methylnaphthalene	**0.0036**	J	0.020	0.0027	1	12/12/05	12/23/05	KWG0521180	
Acenaphthylene	ND	U	0.020	0 0018	1	12/12/05	12/23/05	KWG0521180	
Acenaphthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Dibenzofuran	ND	U	0.020	0.0071	1	12/12/05	12/23/05	KWG0521180	
Fluorene	ND	U	0.020	0.0026	1	12/12/05	12/23/05	KWG0521180	
Phenanthrene	**0.0045**	J	0.020	0.0032	1	12/12/05	12/23/05	KWG0521180	
Anthracene	ND	U	0.020	0.0011	1	12/12/05	12/23/05	KWG0521180	
Fluoranthene	ND	U	0.020	0.0024	1	12/12/05	12/23/05	KWG0521180	
Pyrene	ND	U	0.020	0.0023	1	12/12/05	12/23/05	KWG0521180	
Benz(a)anthracene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Chrysene	ND	U	0.020	0.0013	1	12/12/05	12/23/05	KWG0521180	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	12/12/05	12/23/05	KWG0521180	
Benzo(k)fluoranthene	ND	U	0.020	0.0014	1	12/12/05	12/23/05	KWG0521180	
Benzo(a)pyrene	ND	U	0.020	0.0016	1	12/12/05	12/23/05	KWG0521180	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0021	1	12/12/05	12/23/05	KWG0521180	
Dibenz(a,h)anthracene	ND	U	0.020	0.0017	1	12/12/05	12/23/05	KWG0521180	
Benzo(g,h,i)perylene	ND	U	0.020	0.0037	1	12/12/05	12/23/05	KWG0521180	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	125	24-111	12/23/05	Outside Control Limits
Fluoranthene-d10	130	26-123	12/23/05	Outside Control Limits
Terphenyl-d14	129	25-146	12/23/05	Acceptable

Comments:

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Dawson Group, Incorporated
Project: Red Hill GW Sampling/2001022.013
Sample Matrix: Water

Service Request: K0506494

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3520C
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1		Sur2		Sur3
RH-W-007	K0506494-002	97		87		71
RH-W-008	K0506494-003	99		95		84
RH-B-010	K0506494-004	97		90		75
RH-B-011	K0506494-005	94		97		98
RH-B-012	K0506494-006	94		101		105
Method Blank	KWG0521180-3	125	*	130	*	129
RH-W-008MS	KWG0521180-4	92		84		80
Lab Control Sample	KWG0521180-1	121	*	129	*	116
Duplicate Lab Control Sample	KWG0521180-2	123	*	130	*	115

Surrogate Recovery Control Limits (%)

Sur1	= Fluorene-d10	24-111
Sur2	= Fluoranthene-d10	26-123
Sur3	= Terphenyl-d14	25-146

Results flagged with an asterisk (*) indicate values outside control criteria.

 # flagged with a pound (#) indicate the control criteria is not applicable.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
Project:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/12/2005
Sample Matrix:	Water	**Date Analyzed:**	12/23/2005

Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	RH-W-008	**Units:**	ug/L
Lab Code:	K0506494-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG0521180

Analyte Name	Sample Result	RH-W-008MS KWG0521180-4 Matrix Spike Result	Expected	%Rec	%Rec Limits
Naphthalene	0.48	2.80	2.48	94	27-109
2-Methylnaphthalene	0.11	2.71	2.48	105	23-116
Acenaphthylene	ND	2.56	2.48	103	34-116
Acenaphthene	0.058	2.47	2.48	97	30-117
Dibenzofuran	0.15	2.67	2.48	102	20-134
Fluorene	0.050	2.60	2.48	103	28-130
Phenanthrene	0.059	2.46	2.48	97	36-120
Anthracene	ND	2.43	2.48	98	28-122
Fluoranthene	0.026	2.49	2.48	99	32-134
Pyrene	0.026	2.46	2.48	98	27-135
Benz(a)anthracene	0.0077	2.45	2.48	99	28-131
Chrysene	0.014	2.44	2.48	98	30-130
Benzo(b)fluoranthene	0.0072	2.37	2.48	95	26-138
Benzo(k)fluoranthene	0.0068	2.23	2.48	90	27-135
Benzo(a)pyrene	0.0086	2.33	2.48	94	16-140
Indeno(1,2,3-cd)pyrene	0.0075	2.38	2.48	96	21-143
Dibenz(a,h)anthracene	ND	2.43	2.48	98	24-139
Benzo(g,h,i)perylene	0.0057	2.36	2.48	95	26-132

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Dawson Group, Incorporated	**Service Request:**	K0506494
P ct:	Red Hill GW Sampling/2001022.013	**Date Extracted:**	12/12/2005
S e Matrix:	Water	**Date Analyzed:**	12/23/2005

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3520C	**Units:**	ug/L
Analysis Method:	8270C SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0521180

	Lab Control Sample KWG0521180-1 Lab Control Spike			Duplicate Lab Control Sample KWG0521180-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	2.17	2.50	87	2.39	2.50	95	32-124	9	30
2-Methylnaphthalene	2.46	2.50	98	2.71	2.50	108	19-133	10	30
Acenaphthylene	2.49	2.50	100	2.63	2.50	105	36-128	5	30
Acenaphthene	2.39	2.50	96	2.56	2.50	103	36-126	7	30
Dibenzofuran	2.54	2.50	102	2.70	2.50	108	10-167	6	30
Fluorene	2.61	2.50	104	2.80	2.50	112	41-130	7	30
Phenanthrene	2.44	2.50	97	2.64	2.50	106	43-129	8	30
Anthracene	2.60	2.50	104	2.78	2.50	111	36-131	7	30
Fluoranthene	2.75	2.50	110	3.03	2.50	121	45-139	9	30
Pyrene	2.39	2.50	96	2.46	2.50	98	38-143	3	30
P 'n)anthracene	2.47	2.50	99	2.55	2.50	102	45-131	3	30
C ene	2.50	2.50	100	2.60	2.50	104	47-132	4	30
Benzo(b)fluoranthene	2.71	2.50	108	2.89	2.50	115	51-135	6	30
Benzo(k)fluoranthene	2.69	2.50	108	2.83	2.50	113	46-139	5	30
Benzo(a)pyrene	2.69	2.50	107	2.74	2.50	110	40-138	2	30
Indeno(1,2,3-cd)pyrene	2.79	2.50	111	2.97	2.50	119	35-148	6	30
Dibenz(a,h)anthracene	2.80	2.50	112	2.96	2.50	118	42-143	5	30
Benzo(g,h,i)perylene	2.65	2.50	106	2.80	2.50	112	42-139	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

I scoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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APPENDIX C

Monitoring Well Sampling Logs

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MONITORING WELL FIELD SAMPLING LOG

Dawson Group, Inc.

PROJECT: Groundwater Sampling, Red Hill Fuel Storage Facility, Hawaii - downgradient of USTs *
CONTRACT NO: N62742-01-D-1806, CTO 0013 JOB NO: 2001_022 013
DATE: 12/6/2005 TIME: 9 10 CLIMATIC CONDITIONS: NA
PERSONNEL: K Liu and H Kerr

WELL INFORMATION		PURGE VOLUME		EQUIPMENT	
Well Name/Number	MW-V1D	$V_c = (d_c)^2 \times (h) \times 0\ 041$		Instrument(s)	YSI (Pine rental)
Well Location	*				
Casing Diameter (inches)	1 (d_c)	Volume of water in		Calibration Time	7 30
Total Well Depth (feet)	100	casing (gallons)	0 68 (V_c)	Calibration Result / Comments	
Initial Depth to Water (feet)	83 5				OK
Depth to Product (feet)	NMP				
Height of Water Column (feet)	16.5 (h)				

PURGE LOG *Measurements of temperature, pH, specific conductivity, turbidity, dissolved oxygen, and redox will be collected initially, after every well volume removed, and at the end*

METHOD OF REMOVAL: 12' Dedicated Bailer PUMPING RATE: 0 5 L per bailer

DATE	TIME	CUMULATIVE LITERS REMOVED	TEMP (°C)	pH	SP. COND. (mS/cm)	TURBIDITY (NTU)	DISSOLVED O_2 (mg/L)	REDOX (mV)
12/6/2005	9:21	0.4	23.78	7.73	0.195	NM	4.01	104.3
12/6/2005	9:25	0.8	23.52	7.62	0.000	NM	4.71	-25.1
12/6/2005	9:32	1.2	23.28	7.56	0.000	NM	2.05	-63.9
12/6/2005	9:37	1.6	23.25	7.51	0.218	NM	4.32	-68.8
12/6/2005	9:43	2.0	23.21	7.47	0.216	NM	3.39	-67.9

SAMPLE INFORMATION

SAMPLE WITHDRAWAL METHOD: same as above SAMPLED BY: KL, HK

SAMPLE ID	P, QC, OR QA	TIME COLLECTED	DATE COLLECTED	NOTES
RH-W-007	P	9:43	12/6/2005	both samples were filtered for metal analysis with
RH-W-008	QC	9:43	12/6/2005	peristaltic pump and 0.45-micron filter at office

Notes P = primary sample, QC = quality control (duplicate) sample, QA = quality assurance (triplicate) sample

APPEARANCE OF SAMPLE: Color: clean Temp: 23 21 DO: 3 39
Turbidity: Not measured (NM) pH: 7 47 Redox: -67 9
Sediment: slight Sp Cond: 0 216

LAB ANALYSIS PARAMETERS: (1) BTEX, MtBE, 1,2-DCA - EPA Method 8260B (2) EDB - EPA DW Method 504 1
(3) TPH as gasoline - EPA Method 8015B (4) TPH as diesel - EPA Method 8015B
(5) PAHs - EPA Method 8270C or SIM-PAHs (6) dissolved lead - EPA Method 6020

NUMBER & TYPE OF SAMPLE CONTAINERS USED (include preservatives, if any): (1) 3 40-mL VOAs with HCL
(2) 3 40-mL VOAS with sodium thiosulfate (3) 3 40-mL VOAs with HCL (4) 2 500-mL Glass Amber with HCL
(5) 2 1-L Glass Amber (none) (6) 1 500-mL plastic with HNO3

DECONTAMINATION PROCEDURES: see PACDIV IRP procedures

SAMPLES DELIVERED TO: T. Sober, CAS DATE: 12/8/2005
TRANSPORTER: TIME: 17 00

SURFACE WATER FIELD SAMPLING LOG

Dawson Group, Inc.

PROJECT Groundwater Sampling, Red Hill Fuel Storage Facility, Hawaii - Potable Water Infiltration Tunnel *

CONTRACT NO N62742-01-D-1806, CTO 0013 JOB NO 2001 022 013

DATE 12/6/05 and 12/7/05 TIME 9 10 CLIMATIC CONDITIONS NA

PERSONNEL K Liu and H Kerr

WELL INFORMATION	12/6/05 pumps off	12/7/05 pumps online	**EQUIPMENT**
Well Name/Number	Stilling Basin	Initial Depth to Water (feet) 83 28' TOC	Instrument(s) Solinst Interphase Probe Model 122
Well Location	*	pumps turned online on 12/6/05	Calibration Time NA
Casing Diameter (inches)	NA (d_c)		Calibration Result / Comments NA
Total Well Depth (feet)	NA		
Initial Depth to Water (feet)	80 77' TOC		
Depth to Product (feet)	NA		
Height of Water Column (feet)	NA (h)		

PURGE LOG *Measurements of temperature, pH, specific conductivity, turbidity, dissolved oxygen, and redox will be collected initially, after every well volumne removed, and at the end*

METHOD OF REMOVAL New, disposable, polyethylene bailer PUMPING RATE NA

DATE	TIME	CUMULATIVE GALLONS REMOVED	TEMP (°C)	pH	SP. COND ( )	TURBIDITY ( )	DISSOLVED O_2 ( )	REDOX ( )
				both samples were filtered for metal analysis with				
				peristaltic pump and 0.45-micron filter at office				

SAMPLE INFORMATION

SAMPLE WITHDRAWAL METHOD New, disposable, polyethylene bailer SAMPLED BY KL, HK

SAMPLE ID	P, QC, OR QA	TIME COLLECTED	DATE COLLECTED	NOTES
RH-B-010	P	13:45	12/6/2005	Pumps were offline 24 hours prior to sample
RH-B-011	QC	13:45	12/6/2005	Pumps were offline 24 hours prior to sample
RH-B-012	P	8:54	12/7/2005	Pumps turned online 12/6/05 approx. 1530

Notes P = primary sample, QC = quality control (duplicate) sample, QA = quality assurance (tripicate) sample

APPEARANCE OF SAMPLE Color Clear Temp NA DO NA

Turbidity NA pH NA Redox NA

Sediment None Sp Cond NA

LAB ANALYSIS PARAMETERS (1) BTEX, MtBE, 1,2-DCA - EPA Method 8260B (2) EDB - EPA DW Method 504 1

(3) TPH as gasoline - EPA Method 8015B (4) TPH as diesel - EPA Method 8015B

(5) PAHs - EPA Method 8270C or SIM-PAHs (6) Total lead - EPA Method 6020

NUMBER & TYPE OF SAMPLE CONTAINERS USED (include preservatives, if any) (1) 3 40-mL VOAs with HCL

(2) 3 40-mL VOAS with sodium thiosulfate (3) 3 40-mL VOAs with HCL (4) 2 500-mL Glass Amber with HCL

(5) 2 1-L Glass Amber (none) (6) 1 500-mL plastic with HNO3

DECONTAMINATION PROCEDURES see PACDIV IRP Procedures

SAMPLES DELIVERED TO T. Sober, Columbia Analytical Services DATE 12/8/2005

TRANSPORTER TIME 17 00